

POPULAR Computing WEEKLY

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Vol 5 No 49

Spectrum Plus 2: loading problems?

Details – page 7

FEATURES

Your last chance to
enter the 1986
Readers' Poll

Atari Christmas Show
– full report

Role playing on the ST
with Phantasie – p31



GAUNTLET

From the arcades to your
micro – the long-awaited
Gauntlet, from US Gold,
is now available



Read our full review on page 30

With monitor, data card £100 of software you can (Until mummy catches you)



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Because unlike many other home computers the 464 comes complete with its own green screen or full colour monitor.

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64K of RAM



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...corder and
...ou can't lose.
...hes you.)



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HARDWARE ▶

15 Citizen LSP-10

The Citizen LSP-10 is a compact dot

matrix printer costing £275. Peter Worlock puts it to the test.



◀ SOFTWARE

16 Public Domain games

Rounding off our series on public domain software for PC (compatibles), Marcus Rowland looks at some more games.

19 GameMaker extra

Activision has added two new discs for use with its established GameMaker package. Now you can design your own sports simulations and space scenarios.

21 Mini Office II

New on Rom, Database's Mini-Office series has a reputation for its sophistication at a very low cost. Duncan Evans checks out the Rom version.

GAMES ▶

22 Arcade Action

Includes this week's Top Twenty.

24 Adventure Corner

25 Adventure Help

27 Reviews

Superior's latest, *Savannah*.

Coscan's old favourite *Dontley Kong* and *Destroyer* from Epyx all included in this week's selection.

31 Gauntlet

The arcade sensation has made it on to the micro. John Cook assesses the conversion. And also in colour, *Phantasm* from Strategic Simulations, turns your ST into a role playing machine.



◀ PROGRAMMING

32 BBC

Create pictures on your teletext screen.

32 QL

Using joystick in your own programs.

34 Spectrum

A tape head adjustment program from Stuart Mitchell.

36 Amstrad CPCs

Sembler, an assembler/disassembler from Robert Osborne.

37 Commodore 64

UPD reaches its climax this week.

40 Bytes and Pieces

41 Peek and Poke

REGULARS ▶

6 News Desk

12 Letters, Puzzle

28 Readers' Poll

A second chance to join in the

Popular Readers' Poll and vote for your favourite – and least favourite – products of 1988. We've also got 50 joysticks on offer to entrants.

43 Communications

45 Soundcheck

53 New Releases

54 Ziggurat, Hackers

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ABC

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'Poor management' at Commodore claimed

BROGATS was flying last week between Commodore UK and its advertising agency Model Wainwright Pegg, which accused the computer company of poor management.

The row started after MWP resigned the Commodore account just two months after competing with four other agencies to take Commodore on. In an article in the advertising industry magazine, Campaign, MWP's planning director John Modell said that dealings with Commodore had been marred by late payment and "a singular lack of strategic direction and a disorganised style of management that created a climate of uncertainty".

Commodore's general manager Chris Kasky was at



Kasky: Bow grapes

first reluctant to reply to the accusations, saying that he didn't think it was "fair to discuss it at all".

Later last week, however, Kasky made a statement, "I regret to say that the comments made by John Modell appear to reflect nothing but

sour grapes. I understand it has been reported that only a small proportion of their creative work has been used and that the company's promotional emphasis has shifted in favour of below-the-line work.

"Without wishing to comment openly concerning their input to our projected Amiga business advertising campaign, I would say that we were forced to move this part of our promotion elsewhere."

Commodore's public relations company, Harward Marketing, also said in respect of the allegations of bad management: "Our total dealings with Commodore management reflects the position of a company with a range of outstanding business and consumer products backed by

positive direction."

Meanwhile, on slightly less controversial topics, Kasky announced that since Commodore began its promotional efforts on the Amiga, the machine has been selling "like a hot out of hell - we've probably sold more in the last month than in the previous six put together".

He also confirmed that Starline, the IBM emulator for the Amiga, would be released in the UK. "And I am highly optimistic that it will be here by the end of the year."

Commodore has now cut the price of the Amiga to £1,130 for a 250K machine. This is roughly in line with the price offered to existing Commodore users in the "special offer".

Intel slammed over marketing masterplan

GRIFF has come the way of Intel, manufacturer of the chips that launched the IBM PC and untold numbers of computers. Marketing High Technology, an insider's view, by William Davidson, one-time vice president (marketing) at Intel, may not be altogether bad news, but the review in the Economist is.

In the 80286 processor IBM "poked not just the wrong family of microprocess-

ors... but the wrong Intel one... Crushing the competition is the name of the game - especially if all you have to offer is an inferior device... Intel took its misuses in performance and turned them into marketing places. It's inspiration was to realise that, no matter how inadequate the device was, the physical components represented only a fraction of the actual product... Oh dear...

Lee's comeback

FRANCIS Lee, the man who didn't quite bring us Star Trek during his tenure as Beyond's publisher, has resurfaced as managing director of Starlight Software, a new company sponsoring out of Ariston's London offices.

Lee has set up Starlight to produce "top quality software on both 8- and 16-bit machines," and has signed an exclusive European distribution license with Ariston.

Although Lee only left Beyond in September (Starlight's first two titles are currently in preparation,

Storm breaks over Elite's budget label

The budget label 259 Classics, administered by the team which runs Elite Systems, is being discontinued, and allegations of contract breaking by third party licensors.

The label was set up by Foundry Business Systems, from the same premises as Elite, to release back catalogue product from a number of independent companies at £1.99.

Microsphere's *Starblaster*, Durell's *Scout One* and Micromega's *Full Throttle* all achieved chart success for a second time as part of the 259 Classics label.

Elite boss Steve Wilson is reported to have claimed that managerial staff were not available to cope with the extra work involved in the 259 Classics range.

However, two of the companies which licensed games to 259 Classics have stated that they have taken legal

action against the company. "We made three of our titles available to 259 Classics on the understanding that they would be released within six months," said Luke Andrews of Vortex. "One, *Parasite Lee* (now released, but the other two were not. We have issued a summons and it is now in the hands of our solicitors.

Additionally, I was not aware that we had been dealing with Foundry Business Systems - I had thought the label was part of Elite."

CP Software's Chris Whittington, whose chess title, among others, was taken on by 259 Classics, said, "We have taken out a writ against Foundry Business Systems for alleged non-payment of royalties."

Steve Wilson of Elite and Foundry Business Systems was not available for comment as *Popular* went to press.



Lee: Seen the Starlight

Spectrum Plus 2 loading problems?

The 'performance defect' found in the Spectrum Plus 2 by Boots' quality control department (last week's issue) may not have been as widespread as was first thought. Boots and Amstrad remain tight-lipped on the subject, with Amstrad still denying all knowledge of the problem, but several W H Smith stores (with) experienced particularly high return rates on the machine.

Boots' first models had trouble with poorly-aligned reading heads, but although this has been fixed the machine still lacks volume

control and an external tape port, so a prog problem can't be cured by adjustment.

Various other problems have been reported. The machine's non-standard joystick ports make it incompatible with many of the games currently on the market, which use Kempston protocols. Boots is dealing with this by launching a Kempston interface with the machine.

Other problems reported include a drifting TV signal and incompatibility with peripherals, but it's not yet clear whether or not these are widespread.

Uridium 'clone' puzzle

HEWSON Software is considering action over the marked resemblance between Audiogenic's *Psycoaria* and Hewson's *Uridium*. Andrew Hewson says he's aware that the two look similar, but won't comment on the matter.

It's not, however, clear if Hewson has any case, as the two products are differently coded. Any action would, therefore, have to be based on style line and/or screen design, and as yet there's no legal precedent for this in the software industry.

"Andrew Hewson did con-

tact us," says Audiogenic managing director Martin Maynard, "and suggested that to us going to come up and visit us. We wrote to him and asked him to define what there was within the program that he thought was copyright infringement and he's been unable to come up with anything."

Maynard feels that *Psycoaria* is simply the latest in a long line of about 100 up games with swirling backgrounds, and that *Uridium* is as much based on preceding titles as it is.

Software Hotlines

Since the advent of home computers and games machines, the coin-op makers have had a lot of trouble on their hands keeping ahead of the competition. One way to keep the punters flooding in was to use expensive 'sit-in' cabinets (such as *Star Wars* or *Blade of Honor*) to heighten the tension... and these have gradually evolved into games such as *Hang-On* (which has you actually leaning a bike over to control your on-screen image) and *Space Adventure* (hydraulically operated seat that responds to the movement of your joystick). You can now add *Konami's* *WWF* (or *Mega 24*) to that list, sensation seekers, a sit-down coin-op that is said to leave all the others standing — literally. A single-screen motor racing simulator, this will fling you from side to side, bump you up and down as you scrape the kerb, the works.

It's already set the arcade trade alight, so expect it to make an appearance in your arcade soon. But what's going to be silly enough to try and do a Spectrum version, I wonder?

Certainly not *The Edge*. I bet — far too terrible a bunch of human beings. They are just about to release *Falmen*, a game written for them by Charles Goodwin, heavily involved with such Virgin hits as *Strangelove*.



Falmen

Falmen may look rather like any other 3-D perspective save-the-world job, but has a novel aspect in that much of the game involves around your Servo Class C27 robot programming various Intra-Class Mark 3 robots scattered around the place, using a 'mini logic'.

Sounds like it has enough originality to warrant a look. Out soon on Amstrad, £8.95 (tape) £14.95 (disk).

Anolon — an *Anolon* clone for home micros. This brilliant breakout variant has the arcade about six months back. Like breakout, you have a paddle and must rebound a ball against a wall, knocking out bricks as you do so (the original was designed by Apple founder Steve Wozniak, you know). *Anolon* carries this format on, but the walls have many different shapes, 'jells' can be collected that give you extra powers and monsters appear from time to time and generally get in the way.

Now *CRL* is producing a game which looks like a combination of the same elements. Called *Ball Breaker*, it should be out in the New Year on Amstrad, Commodore 64 and Spectrum, priced £7.95 (tape) and £14.95 (disk). Knockout.

John Cook

Acorn pulls off masterstroke



Compact. Beat off rivals

ACORN has won an order worth nearly £1 million to supply Master Compact and Master 128 machines to Poland.

The 1500 Master Compact and 2000 Master 128s, plus disc drives and monitors are going to PZG, a miners' co-operative organisation in the industrial area of Katowice. Acorn is also selling software for the machines to PZG — these will include games, education and utility programs for the machines.

According to Acorn, Amstrad and Commodore also competed for the contract.



Mega 24



Clough plans cup run

Elite makes a comeback on BBCs

AFTER two years of relative neglect Acornsoft redirected its attention to Elite, this time under the auspices of Superior Software.

Superior teamed up with Acornsoft prior to the launch of the Master Compact to develop software for the machine, but Elite is now to be offered on the Master Electron, 68000-processor Master Turbo and the BBC B. The Electron program is an improvement on the version Acornsoft released

for Christmas 1984.

Elite has been one of



New look Electron Elite

Acorn's more spectacular missed opportunities. The company launched the program in autumn 1984, but showed no sign of wanting to release it on any machines other than the BBC B and the Electron.

Firebird filled the gap, buying up the rights for Int, Spectrum and Amstrad among others (an Apple II version is sold in the US) and although this cost a substantial sum Elite remains Firebird's most successful title.

CDS is over the moon with Brian Clough's Football Fortunes

CDS's latest release represents a departure for the company — a computer-assisted board game entitled Brian Clough's Football Fortunes.

The game is something of a cross between Monopoly and Football Manager.

Your playing pieces move around the non-computerised board, where you can buy and sell players, accept sponsorships, look out the wages, and so on, while the computer works out the match results and league tables.

Computer-assisted board games haven't traditionally been successful, but Fortunes is well designed, and could well break the mould.

Although Clough, the manager of Nottingham Forest for the past twelve years, has lent his name to the program he took no part in its design, which was done entirely within CDS.

Brian Clough's Football Fortunes goes on sale in the middle of January, and will be available for the Commodore 64, Atari 8-bit, Amstrad CPC and PCW and BBC/Neptune at £14.95 cassette and £17.95 disc, and £24.95 on PC compatibles, Apple II and Atari ST.

Free Microfair tickets

Will next 24 Microfair will be something of a double celebration — not only is it the Christmas show, but also the 21st Microfair.

It will take place at the Horticultural Hall, in London SW1, near Victoria Station.

Normal entry price is £2, but Popular Computing Monthly has 200 tickets to give away to readers.

If you would like free Microfair tickets, simply send off to Microfair ticket office, Popular Computing Monthly, 12-13 Little Newport Street, London WC2H 7PP, enclosing your name and address on a blank

envelope. You do not need to put a stamp on the envelope addressed to yourself.

No more than two tickets per person please, and they will be sent out on a first

come, first served basis.

Time is short, so please make sure your application reaches us by Tuesday, December 9, to ensure we can get them to you in time.



You too could be there ...

Footnotes

Y2K can always tell when a company has fallen into the clutches of a certain kind of philosophy. Various genres you've made heard of start leaking out, calling for inquiries, revelling on about what they feel for breakfast and so on.

Step forward Steven Bell, newly installed managing director of Microspace's UK arm. In one short week he's said how happy he is to have set up the company 100 feet door to his work in 20 miles away from Charles and G, and he's leaped out at the "shady producer" the soft-

ware industry is leasing today.

The problem is that there are too many software houses around who are apparently working on the assumption that end users have IQs less than orang-outangs. What does he mean? Do you know anybody who has an orang-outang? Who are these software houses who think more owners have orang-outangs? Whatever, Bell doesn't seem to realise there's an orang-outang market out there.

Smaller User clearly has an idea what the public wants, although if it's model texts one wonders why they're reading computer magazines.

The mag's recent "Win a Task" competition asks you to name the two American bands named after generals. Truly question this, but we reckon the answer is Patton and Grant, and the other two are named after Sir Alfred Sherman, the well-known musicalist, and Francis Lee, the well-known amicable departure.

Tony UK meanwhile has an eye for the odd creative mispelling. Jet Set Willie is said to die out soon for the Kinship alongside Harvey David Shawcrossman. The latter is no doubt related to the reference to the "latter" sharks in the same advertisement.



Atari comes out shooting

PERHAPS it isn't surprising that computer shows take on the character of computer owners.

The range is enormous - from the cheap and cheerful ZX Miniseries, through the very middle of the road Amstrad shows, to the solid and worthy respectability of Acorn events.

Atari shows, however, are for headbangers, and last week's event in London was no exception. Immediately inside the door you were dominated by images of diving aliens, screaming lasers, roaring Formula 1 engines, and swooping Ninja warriors, all to appropriate screaming sound effects.

To cap it all, the show organisers saw fit to broadcast live renditions of Christmas carols while a robot clad in red suit and white whiskers went AWOL from Santa's Ghetto and banged up and down the aisles, moving

down innocent bystanders.

The impression may be unfortunate, given Atari's efforts to leave this image behind. Perhaps it's only because the company decided to emphasise "entertainment" at this pre-Christmas show.

Or it may signify a shift in policy, due to the recent arrival of some of the men who took a business computing company like Commodore and turned it into the world's leading manufacturer of entertainment computers.

On the Atari stand roof there were STs running a communications demo (a playing MUD), there were old 2600 games consoles running old 2600 games like *Conquest*, *Star Masters* and *Pole Position*.

There were brand new 7800 games consoles, running old 2600 games. The only obviously new software was *Arkanoid* - but damned

good it was. Software that takes advantage of the 7800's facilities may take a while to arrive but it should be worth waiting for.

On the Atari stand the Harry Hall himself demonstrated his role as headbanger par excellence, showing off *Colossus* to excellent effect while the tunes of Jean Michel Jarre throbbed to bring the stand down around his ears.

But it wasn't all like this. Hidden away among the hordes of joystick thrashers and keyboard bashers were a few gems.

On the Atari stand itself could be seen the outstanding ST version of Sublogic's *Flight Simulator II*. In addition to the incredible graphics, and a number of advanced features like autopilot modes, the ST implementation allows you to hook two STs together and enjoy a two-player dogfight.

Microdeal demoed something called *Journey* into the Lark. You take the ST soft-

ware, officially licensed version of the movie. It's just another back-to-the-future game, but the graphics and animation are worth seeing.

Perhaps the single most impressive item at the show was Silos Shop's ST software for which puts just



once and for all, to the idea that the STs are short of software.



were, the laser disc version of *Dragon's Lair*. Hook everything up to a laser disc player, and away you go.

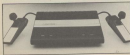
In any location you select as action (*OPEN DOOR*, *FIGHT DRAGON*), and the ST displays the appropriate sequence of animation from the laser disc. The end result is an adventure game with the animated graphics of the arcade game.

For the £99 price tag, you get the ST software and a copy of the *Dragon's Lair* laser disc. Of course, you need to shell out £500-plus on the disc player as well.

Also on the Microdeal stand was *Knight Kid II* - the

On the down side of the show a couple of items caught the eye. First, ST owners should watch software prices. Some companies appear to be selling US imports at prices anything up to £15 over the odds. One company was asking more than £40 for an *Arkanoid* game that Silos Shop is selling for £29.

Second, the much-talked-about, long-awaited Mac II emulator was on sale in the Patrick stand. However, the company was unable to show it working and could not supply one for review. Until you've read a full review, you may want to hold on to your money. **Peter Workbok**



DIARY DATES DECEMBER

13 December

21st ZX Microfair

Royal Horticultural Hall, London SW1
Details: Popular show for the Sinclair community. Add-ons, software, lots of free stuff.
Price: £2
Organiser: Mike Johnston, 81-581 9172

JANUARY

9-11 January

8th Official Amstrad Computer Show

Royal Horticultural Hall, London SW1
Details: The year ticks off with the first of an ever increasing series of Amstrad shows. Hardware, software, it works for CPCs and PCs, with early support for the PC to be expected.
Price: £3 adult, £1 children, £1 discount for advance booking
Organiser: Richard Goldstone, 081-458 8835

FEBRUARY

17-20 February

Which Computer? Show

MCC, Birmingham
Details: Mainly business exhibitors, includes Commodore, and lots of PC clones.
Price: £5
Organiser: Calvert Exhibitions, 81-891 5801

26-28 February

The Atari Computer Show

School, London W6
Details: First chance to Atari to show off the exciting new strategy it's already working on.
Price: £1 adult, £3 children, £1 discount for advance booking
Organiser: Database Exhibitions, 081-458 8835

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organisers before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organisers.



Budget suite from Psion . . .

PSION is joining the low-cost PC software producers with *PC-Four*, a range of business programs based on its *Exchange* package, but priced at £55.

The four programs included are *PC-Gail* (word processor), *PC-Active* (database), *PC-Memo* (finance planner) and *PC-Bazel* (business graphics).

While these are the same titles as the programs included in *Exchange* (and developments from Psion's suite of programs supplied free with the OLI), Psion has removed facilities such as networking and multiple task handling to keep the price down.

Details from Psion at Psion House, Harcourt Street, London W1H 1DT.

Ceefax-based programming

BBC owners will be able to create their own programs using information from Ceefax, with a new series of programs from BBC Teletextware.

Starting in February next year, these programs are free to anyone with a BBC and relevant adaptor.

The aim is to provide the techniques of using Ceefax information as data within basic programs.

Details from Jeremy Bradshaw, Teletextware Organiser, BBC Enterprises, Room A3060, Woodlands, Wood Lane, London W12 0TT. Tel: 01-578 0883.

Compile with C

CA Special Products has now released a C compiler to run on its Casper 66000 second processor for the BBC machines.

Compiler C is supplied on either 40 or 80 track discs, and takes up about 32K of Ram. It costs £89 plus V.A.T.

Details from CA Special Products at Moss Way, Dorebride Industrial Estate, Dursleyville KY11 5JW.

. . . and more from Compsort

COMPSORT's 'budget' range for the Amstrad PC1512 is now available through First Software. The range comprises versions of Compsort's full price professional packages, with most of the features intact.

These include *Budget Data 4* (database at £99.95), and *Deftograph*, a companion graphics program at £59.95.

Details from First Software at Unit 1, Wade Road, Dagenham, Essex RM24 0NG.

ST business graphics pack

KUMA has enhanced its K-Graph business graphics package for the Atari ST with the release of K-Graph 2, a new version of the company's successful business graphics program.

The new package allows users to produce charts and graphs making use of Gem's windows and pull-down menus. It allows up to five graphs, each showing different data to be displayed simultaneously. The package's main new features are matrix and trig functions; a save graph function; print resume datasets; statistics and graphs and variable x and y origins.

Both this and the original version featured advanced printing options, selective screen dumps, enlargement and reduction and automatic scaling of graphs and charts.

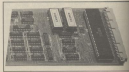
The new package costs £49.95, and owners of the old version can upgrade for £10.

Details from Kuma, 11 Horsehoe Park, Pangbourne, Berks RG8 7JW. Tel: 0793 4335.

Domark launches trial by trivia

AFTER an apparent PCW software dearth Domark has filled the breach with a conversion of its new hit, *Trivial Pursuit*.

The game is a faithful reproduction of the original featuring high resolution display and asking music questions to the original, although the PCW's basic sound facilities make this trickier than you might expect. It costs £19.95.



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programs



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and Mach

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peripherals to
be connected
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splitter and
connector
with
self-adhesive pad
allows you to keep your T.V. and
computer aerial leads separate
without disturbing the picture



£2.25

Spectrum 128+ 2 to Midi Lead

Midi control lead for
Spectrum 128+2
computer



£9.75

Split Extension Connector

Enables 1 Portmidi
or Synthesizer peripheral
to be connected to the
computer bus



SPECTRUM AMSTRAD
£10.99 £11.75

Manufacturer of all leading European
peripherals and cables
and interface to connect
them together

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Letters

The Interface question

Do interface One with microdrives and the Plus 2 Spectrum really go together? Overcome by the vision of a home mine with Sinclair logo over a handsome keyboard, I bought a Plus 2 and this was my first concern. The reviews about one it and the question perplexing the elephant in love with the mouse - how? - is not answered.

The manual is cut (three lines on page 201), saying, "The Interface One and microdrives are connected to the expansion I/O socket at the rear of the Plus 2." Untrue, of course. You have to disconnect them and have you do it is your problem. No reference is made to the radically altered physics of the Plus 2 as against its forerunners.

The wedge-shaped interface One was pulled back onto and under the old Spectrum while two protruding captive screws reached up and through to the pot mountings, holding the interface firm against edge connector wobble.

If you choose to connect the Plus 2 in the same way, you will need to remove these screws to allow a snug fit as there is no provision for receiving these or any screws through the base of the Plus 2. This is easiest done by separating top and bottom housings of the interface. The front left corner, back of the

Plus 2 must be removed for the same reason. This is a push-in grommet and can be pulled out intact. The U/D port connection is made simply enough by pushing the U/T on to the edge connector without clearance problems, for

You now, however, have the large Plus 2 printed circuit-board over the smaller interface secured only by the edge-conceptors itself. This is an invitation to the wackiness fit to be set to music by Weber. In the event, sliding strips of Bio-Tack around the edges of the interface about against the Plus 2 and building up a surgical beam of epoxy glue around the Zenith and the Danmoder end of the computer give a perfectly stable assembly. Unfortunately, microdrives are now obsolete; the Joystick ports at the left edge of the micro-

The obvious alternative is a full-way extension cable from the rear port to Interface One. This means another edge connection and the threat of spaghetti spread. However, I have settled for this in the meantime with a 25-pin cable for ETS from High Wycombe.

And the verdict? The Plus 2 does indeed work fully with the microdrives in both 48 and 128K modes, and this speed is a true relief in comparison with the built-in tape recorder.

But . . . there is an inertia and delay needed for warming up. At switch on from cold there is no response to release

give commands. The drive wheels ground in their slippage. Leave the computer switched on and try again in not less than half an hour and response has become normal. In contrast, direct entry and tape operations work instantly on start up.

I have not been able to confirm if the fault is general or unique to the flag.

Interaxes and drives will work perfectly with my old Spectrum. The condition, if incurable, is a great pity because this is otherwise a very good machine, perhaps the best value in new machines for this kind of money and a natural to work with microdrives. I would be grateful for any suggestions readers may have to bring my microdrives in from the cold.

Director General

Downloaded At: 11:53 11 September 2009

After reading Peck and Fiske in *Popular* a couple of weeks back I noticed you gave someone instructions on how to fit a seat cushion on a Commodore 64. I have used one of these cushions for a very long time, and have found the following routine very useful for getting a Basic program back after a *Wipe* or a *crash*:

Clear the screen, enter the code below exactly, making sure it starts from the top left hand corner, and then type **CTRL+D** (Return).

[illegible]

You should now find you have your basic program fixed all around and working.

The savings that MacArthur's emergency request for fiscal funds allows, states:

FROM 1:00 PM TO 5:00 PM
11-20-1988

Thurs 8:58-12:00 will run the routines.

Keywords: child sexual abuse; disclosure; self-blame; social support

[illegible]

With reference to the letter from H P M Reagen, published in *Abgitar*, November 20, regarding printing with a CL and Serial 8056 printer, enter the following comments directly:

Abstract

This will enable a program to be printed on to the printer. After modifying the program, or listing again, just enter the `list` command. To list specific lines of a program, enter `list n1, n2, n30` (substitute lines you want).

To print variables from within a program you would need the `lsrad` statement, and an `Open` = long number between three and 15, thought to three being set initially by the GL, but then can

Puzzle

Revised: 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680

Arthur Protopopescu (left) here pronounced is called for the "Macabre" rather the more quiet optimism that he had the previous night.

The serial number on the ticket is 961217, he observed, "and this number is equal to the sum of the fifth powers of each of its digits. He jotted down the calculation and checked that, five more, indeed the case.

學 期 考 試 題 庫

The professor's keen mathematical mind had noticed this peculiarity, and he was convinced that this was a good omen. Assuming this was the case, can you find any other three-digit numbers that also follow the rule?

Keywords: child sexual abuse; disclosure; social support

In the program, the number of steps in each month is held in the array `MT[12]`. Line 40 gives the starting values of the variables. `ST` is the date, `MT` is the month, `DAY` is the day of the week (Sunday = 1 to Saturday = 7), and `C` is the night-day cycle which governs On/Off status.

The conditions governing each member's attendance are checked in lines 50 to 60. When all conditions are favourable the club is entered last.

Finally, steps 100 to 100 increment each of the "used" independent.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

That winner this week is **Peter Thurnher** of **Berlin/Heidelberg**. Good job! You are receiving \$100.

Table 1

The closing date for *Parasitology* is December 31st. Answers are a permanent record.

[illegible]

be used).

To print, *Post* #3, 45, 55, for example would print whatever value was held by 45 and 55.

With regard to the other problem of not being able to print with three of the Pagan programs, I presume Mr/Ms Keegan ran the program *Jo-aid*. As to set up the printer for the QL, the same needs to be done for the Abacus and Alpha cartridges, as follows:

```
COPY mdv1_printer.dat to
mdv1_printer.dat
```

with the Quill cartridge in the left drive and *Archie* or *Abacus* in the right drive. If it says that the file already exists, enter *Delete mdv1_printer.dat* (without removing any cartridges) and do the Copy again.

Most unfortunate requests graphics being printer which can't be done. The QL manual suggests photographing the screen!

R S Shepperson
Aylesbury

Thanks to Kenneth Ross, M H Mottram, George Winton, John Turner and Neal Card, who also wrote in to rescue H P M Keegan - all your letters have been forwarded to him/her.



"... And there's no problem over crowd violence!"

BBC not forgotten

In your Games column, November 13, you clearly stated that "BBC owners - at least as far as games playing goes - are almost forgotten these days." This is not true.

There are loads of great games around for the BBC now: *Archie*, *Parrot*, *Post*, *Green Beret*, *Shasta* and *Goldie*, *Plane*, *Sea Master*, *Airwolf*, *Billie*, *Donk* and many others too numerous to mention.

Any game that is good always gets converted to BBC.

James Oliver
Sunderland

Parrot about piracy

Further to Robert Baker's letter in *Popular*, October 30, may I just add that if *Archie* looks as strongly about tape piracy, then what on earth is it doing selling audio equipment with two cassette decks, obviously meant for copying tapes?

Al Pike
North Yorks

Small consolation

In your October 30 issue you carried an article on the Sega Master system, claiming that it could spell the end for the humble 8-bit home computer. How can you possibly make this conclusion? The system offers no facilities not available on existing home systems, and is no cheaper.

Your main point of interest seemed to be the system's video chip, which you described as "An outstanding asset". Only the Commodore 64 comes anywhere near this standard.

Well, truly the graphics in your screen shots didn't look at that impressive anyway, and secondly, on reading your description I was surprised to find that you were relying off the stated specifications of the old MSX mark one video chip, with the exception of the 32 colour palette.

Thank I'm daft! Well I might surprise you to know that Sega do make MSX computers, although they're not sold here, and of course with 256 colours, 32 on screen at once in four different sizes, the MSX computers do indeed beat the Commodore.

Also you mentioned the choice of cartridges or tapes, which again, normal MSX computers have, including cartridges with 128K Ram.

So in short, far from being a superior games machine, the Sega appears to be a fairly average machine with none of the advantages of a normal home computer. Unless the other game consoles being released can do considerably better, it's hard to see any "threat to the home video industry as we know it".

Graham Shepherd
Woking

The games consoles will be priced at around £90, which is considerably cheaper than any home computer currently being manufactured. At that price and with cartridges costs coming down, they could well appeal to the games playing now using 8-bit micros.

Oric bytes back

It seems there has been a large quantity of people writing in to *Popular* Computing Weekly in recent issues, singing the praises of the Oric Atmos micro, and lamenting the lack of a good disc interface or support for their systems.

I would be grateful if you would bring to the attention of your readership the fact the Byte Drive 500 disc systems for the Oric (MSX models only) are now back on the market at £159.50 (around half the original price), including disc interface, 3 inch disc drive and power supply, together with the very latest version of Byte Drive DOS which brings the standard of the Oric's basic almost to a par with the BBC Micro in terms of facility and facilities, including ten programmable function keys, random access disc files, *Uniflow* loops, text windows, command abbreviation facilities, and much more, whilst taking up less space than the original Byte Drive DOS. Up to four disc drives of any type described as BBC-compatible (including 3 inch and 5 1/4 inch types) are supported.

If any users are interested for if there are any Byte Drive 500 users who have not yet been in contact, please would they write to MSDB at the address below - the users group has been running well over a year now and provides enthusiastic and comprehensive support for the system.

Jeremy Hibbins
Byte Drive Users Group
Ashley House
Ordnance Road
Surreydale
Berkshire SL2 0RH

Fair warning

A warning to Commodore MS5001 printer owners. There is a new-style printer ribbon currently on sale. This is easily distinguished by the lack of an index cut into the bottom of the cassette.

The new ribbon cartridge is based on the typewriter and is premixed with pre-linked ribbon which is great when the typewriter print head descends with some force, but is useless in a dot matrix printer, the resulting print being a grey, almost unreadable mess. I have tried out several of the new-style ribbons, all with the same result.

The original MS5001 cassette contains a short loop of ribbon which is clearly index with each revolution.

J Holmes
Glasgow

Confused by QL cables

The QL supplement in September contained an advertisement by WD Software for an extension cable to connect ZX Microdrives to the QL.

The QL User Guide states that ZX Microdrives are unstable. Can you comment, please?

R Clive
Lancashire

According to WD Software, nine out of ten ZX Microdrives will work OK on the QL with its cable. WD says it will refund customers' money if they buy the cable and then discover that it doesn't work.

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120000

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Pharmacy	Pharmacy, 1 lb.	\$1.19	\$1.19
Veterinary	Veterinary, 1 lb.	\$1.19	\$1.19
Religious	Religious, 1 lb.	\$1.19	\$1.19
Art	Art, 1 lb.	\$1.19	\$1.19
Music	Music, 1 lb.	\$1.19	\$1.19
Sports	Sports, 1 lb.	\$1.19	\$1.19
Recreation	Recreation, 1 lb.	\$1.19	\$1.19
Entertainment	Entertainment, 1 lb.	\$1.19	\$1.19
Food	Food, 1 lb.	\$1.19	\$1.19
Drinks	Drinks, 1 lb.	\$1.19	\$1.19
Alcohol	Alcohol, 1 lb.	\$1.19	\$1.19
Tobacco	Tobacco, 1 lb.	\$1.19	\$1.19
Clothing	Clothing, 1 lb.	\$1.19	\$1.19
Shoes	Shoes, 1 lb.	\$1.19	\$1.19
Jewelry	Jewelry, 1 lb.	\$1.19	\$1.19
Watches	Watches, 1 lb.	\$1.19	\$1.19
Glasses	Glasses, 1 lb.	\$1.19	\$1.19
Headphones	Headphones, 1 lb.	\$1.19	\$1.19
Speakers	Speakers, 1 lb.	\$1.19	\$1.19
Cameras	Cameras, 1 lb.	\$1.19	\$1.19
Video	Video, 1 lb.	\$1.19	\$1.19
Audio	Audio, 1 lb.	\$1.19	\$1.19
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Table 1

Abstract

Abstract



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An honourable Citizen

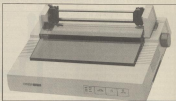
Peter Worlock finds the Citizen LSP 10 to be a reliable new printer

Not so long ago, the main problem facing anyone who wanted a printer was how to raise the money to buy one. Especially for home computer users, since most printers cost more than the computer itself.

Now, however, the problem is how to choose one make and model from the many available. Prices have fallen as quickly as print quality has risen.

Although few printer manufacturers are household names, Citizen is probably among the lesser known names after the likes of Epson, Star and Brother. But the company has built a reputation for quality and value in the past year or so.

Among its current line of printers is the LSP 10, a medium-priced model with features that put it well up among the higher-priced competitors.



A powerful and solid unit

putting the switches into a small niche under the print-head carrier bar. This is

Features

Construction is to a very high standard in stylish off-white, and the dimensions have been kept small – 15in wide, 16in deep, and a mere 3in high.

The print-head is a resin-jet model, giving characters of 9 x 11 dots in normal mode, and 17 x 17 dots in NLQ (Near Letter Quality) mode.

Print speeds are reasonable – 120 cps in normal mode, 35 cps in NLQ. Noise levels are also acceptable, although in graphics mode, the printer starts to screech a little. Most dot-matrix printers suffer the same fault, however.

As far as the major issue of printer users is concerned – its switch settings – Citizen has taken the middle line,

Printing in bold gives a nice effect, underlining is easy, and when combined with italics it produces this sort of correspondence.

more convenient than the old Epson method which involved dismantling the entire printer to change a switch, but not as handy as having the switches on the outside of the printer casing.

The LSP 10 can operate in two modes – selected by dip switch – emulating either an Epson or an IBM Pro Printer.

All other standard features are supplied, including emphasised, double strike, italic, expanded and condensed print modes, multiple-density graphics, and downloadable character sets.

An optional tractor feed is included in the package, as are paper guides for single-sheet feed.

The printer comes fitted with a Centronics-style parallel interface. Optional facilities – at extra cost, naturally – include an RS232 interface at £54, and a multiple sheet feeder at £56.

Finally, the documentation is well-written and comprehensive, with lots of examples and a handy, two-colour reference guide to control codes.

Conclusion

The LSP 10 is a well-made machine with features that push it firmly into the mid-range of current printers. However, at the price it represents good value for money in this very competitive area.

It's probably not expensive – and less powerful – for the job of cleaning out your program listings, but is ideal for heavy-duty word processing and graphics use.

The standard of construction holds out the promise of good reliability, and something to note in this respect – Citizen offers a two-year warranty on its printers, which should do a lot for your peace of mind.

Peter Worlock



The LSP 10 – spotted as a mouse

Product Citizen CPE 10 Price £275
Supplier Citrus Europe, 4/10 Crowley Road, Uxbridge, Middlesex UB8 3XW

Of worms and bouncing babies

Marcus Rowland completes his three-part series on public domain software

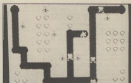
Two weeks ago we looked at public domain software games. Here are the rest of them. *Willy the Worm* probably needs about 128K, plus a graphics display. Registration is \$10, no benefits are specified (PCBRUK Vol 241).

Bouncing Babies by Dave Baskin is an irresistibly sick idea that has often appeared as a stocking-filler electronic game. A building is on fire, and two attendants have to manoeuvre a trampoline to bounce an endless stream of babies into an ambulance. As the game progresses the number of babies in the air increases. The left and right cursor keys, or keys 1-3, are the only controls, shifting the trampoline to three points between the building and the ambulance. The colour graphics are excellent, and the game is extremely fast.

Bouncing Babies needs 128K and colour. Registration is \$5, no benefits are specified (PCBRUK Vol 46).

Flightman (by Peter Adams) is an interesting rep game. The scenario is vaguely similar to *Mad Max*: one of the last enclaves of civilisation, and aircraft factory, is under attack by hordes of marauding barbarians. The player controls a fighter plane, first in a strategic mode (using the cursor keys to fly to meet the most threatening enemy), then in a difficult tactical mode. This presents two waves of the aircraft, one from above and one from the side, flying from West to East across the screen. The normal control keys move the aircraft up and down and backwards and forwards; the left-hand alphabet keys move the aircraft North or South (left or right from the player's point of view). To attack, the plane must be directly behind the enemy; the ground undulates, making it hard to hit and easy to crash. Collisions with other aircraft or the ground wreck the plane.

Occasionally the aircraft must dock



"Droop"

with a blimp to take on fuel and ammunition. Attackers include bikers, aircraft and trucks, plus a heat seeking missile that can't be attacked, although it's possible to tick it into flying into the ground.

This program makes fairly effective use of colour graphics for an IBM or composite monitor. The concept and execution of this game are good, but there are a few flaws, notably in the author's spelling (in titles and screen messages), the poor graphics of the strategic screen, and in the fact that it doesn't seem to be possible to leave the tactical screen and reappear with the blimp if you run out of ammunition.

This is also the only game to crash (in every sense) if *Scrabble* was activated while it was running.

Flightman needs 128K and colour (composite or RGB). The author asks for donations of \$5-\$50, no benefits are specified (PCBRUK Vol 160).

Droop (by Segal) is a genuine public domain version of the arcade game, by the original manufacturers. It seems

to have all the features of other high-resolution versions, including 3D graphics, but doesn't have scores. It accepts joystick or keyboard control, and joystick use is strongly advised. Play proceeds in the usual waves of ascending difficulty, and is reasonably fast though 8-bit versions I've seen have been fast-

er. *Droop* needs colour, but there are no indications of minimum memory or other limitations. (PCBRUK Volume 126.)

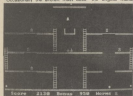
Spacewar (by Ed Sella) is a one or two player version of the program that originally introduced computers to spaceship games, and directly inspired *Assault*. Two ships orbit around an Asteroid-style screen, attacking each other with lasers and photon torpedoes. Their equipment includes force fields, invisibility screens, and a random-jump function.

Options let you put a planet at the centre of the screen, turn gravity on or off, and have either ship controlled by the computer. The main charm of this game is its use of Newtonian physics; torpedoes go into orbit when fired, and if you don't take care to change your path they'll whip round the planet and hit you several seconds later.

The game is supplied in two forms: one using a normal IBM colour-graphics card, the other a high-resolution Hercules graphics card. Controls use the left-hand alphabet keys and the right-hand cursor pad; no keyboard problems are likely. This program 'looks out' *Scrabble*, but doesn't harm any files that are in memory.

Spacewar needs 128K and a colour board or Hercules-compatible mono graphics card. Registration costs \$25 (annual £15) and includes the latest version of the game; for \$50 (annual £25) the source code is also supplied (PCBRUK Volume 282).

All the programs described are available from International Software Distributors Limited, PO Box 872, Sutton Coldfield, West Midlands B79 6LP 021-378 2229, which imports directly from PC-Sig in California. Note that this is a different address from the given previously; this address is correct.



With the Worm spinning on platforms

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The return of the (almost) paperless office

Duncan Evans plays with the toy not for executives, but for the average computer user at home

Previously available on disc or cassette, *Mini Office 2* is a Rom-based version that plugs into any BBC machine. In fact, if you're going to provide an integrated package, using the instant access that Rom's provide is the most sensible and efficient method.

Physically, *Mini Office 2* consists of a circuit board containing four 32Kbit chips, and a short length of lead plus connector that plugs into a spare Rom socket (you still have one spare, don't you?).

The programs offered are a word processor, database, spreadsheet, business graphics, communications and text, and something of a throwaway item, a label printer.

If you've ever used *Wordwise* then you'll feel at home straight away with the *Mini Office* word processor. It's virtually identical in fact, the only changes being cosmetic. Most useful of these is the capability to process in 20, 40 or 80 columns. The disadvantage with the 80 column mode is that you get away with less money for your text, three pages of A4 to be precise. The 40 column mode is the most efficient as it uses the teletext mode 7, providing over 20K of free memory.

The facilities it offers are pretty standard for a text only word processor and include justification, search and replace, block move and delete, preview option, merge text, automatic wordwrap and the ability to have imbedded control commands that can be sent to the printer. All standard fare but essential nevertheless.

The database has an odd look to it, resembling a cut-down spreadsheet more than

anything else. All the same it boasts 1023 records (enough for most small concerns), up to 20 fields per record, the essential sorting facility and a type of field identifier. The instructions for the database are not quite as clear as they could be and indeed the database itself is not simply laid out. In its defence it is comprehensive and offers calculation facilities as well.

The spreadsheet, like everything else in *Mini Office*, is fairly standard and does everything you'd expect a spreadsheet to do. It provides up to 52 columns by 99 rows with each column being up to 18 characters in size.

Also, the spreadsheet can lock and unlock rows, columns and cells to avoid values and formulas from being overwritten or changed, and allow various mathematical operations beyond \times , \div , $+$ and $-$. The data from the spreadsheet can be saved and incorporated into the graphics program for displaying in a more attractive manner.

The graphics package is the only part of *Mini Office* which is something of a disappointment. It offers bar charts, line graphs and pie charts.



"Overall, Mini Office 2 provides a useful suite of functions... it's worth checking out"

When displaying the pie chart, although the program allows up to 20 items of data, the ones with the smallest values are cobbled together and displayed under the anonymous banner of 'Others'. The pie chart itself is drawn slowly, as is the movement of the text labelling. When displaying the bar chart the names of items of data are abbreviated to one letter, regardless of how many there are of them and the text labels can only be run horizontally, not vertically which would be of far more use.

For clubs and newsletters the facilities offered by Graphics are probably good enough but executive types should look elsewhere.

And as to Communications which mainly offers the facility to communicate with Mincink/Telecom Gold. For

enough from Database's point of view but justification on the grounds that it's the most common protocol is plain hogwash. There is an option to customise the protocol used which could be useful for bulletin boards, but not for something like Protext/Message 800.

Label printing can be regarded as something of a flexible tacked onto the end of the entire package. Having said that, if label printing is where you're at then this is certainly one for you.

Overall *Mini Office 2* provides a useful, if not spectacular, suite of functions. If you really only need one of the programs then it would be better to spend your money on a dedicated Rom, otherwise it's worth checking out the all-round capabilities of *Mini Office*.

Duncan Evans



Program *Mini Office 2*
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Supplier Database Publications, Europa House, 88 Chester Road, Hazel Grove, Stockport SK7 5HT.



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Designer games creation

Most computer owners go through a stage of wanting to write marvellous arcade games, finding that Basic is too slow and limiting, and feeling their heads against the wall trying and failing to learn machine code (I know I did). The popular solution is to buy one of the many games design programs on the market, the best of which for the Commodore 64 is Activision's *GameMaker*.

Written by Gary Hibel Kitcher, this disc-based package has now been enhanced by the release of two *Designer's Library* discs — *Sports* and *Space*.

The *GameMaker* program — which of course you will need to use the *Designer's Library* discs — is a sophisticated menu-driven package which allows you to define sprite shapes, backgrounds, sound effects, and various game parameters such as collision rules, scoring and so on. It's quite possible to build up respectable-looking games which run at machine-code speed, but the process is pretty time-consuming.

The *Designer's Library* discs



(See all that you can do)

make things even easier by giving you lots of files of sprites, backgrounds, sound effects and so on, which saves you having to define your own. Each disc contains a number of files which can be loaded into the appropriate section of the *GameMaker* program, manipulated and improved, then saved as fully functioning games.

The *Sports* disc, for instance, contains sections of background which can be cut

and pasted together to create baseball diamonds, football (American) fields, basketball courts, billiard tables and so on. The sprite section contains relevant figures such as basketball players (from a variety of angles), golf balls, hockey balls, pool balls — quite a lot of balls in fact.

Also included are stirring theme tunes and plinky sound effects.

The *Space* disc is altogether more imaginative, with var-

ious spaceships (including a marvellous giant rotating Death Star), backgrounds showing alien planet life and strange machinery, catchy sound effects and so forth.

All the files can be edited using the facilities of *GameMaker*, which will be fairly familiar if you have seen any similar package; a grid-type sprite designer, a synthesizer-panel sound effects generator, lots of menus to define gameplay and comprehensive save/load facilities.

Also interesting though are the possibilities of combining files from the two existing libraries (none to come, no doubt) to create weird hybrids like footballing aliens or inter-galactic billiards.

Certainly better than struggling to count backwards in hexadecimal, and probably the closest most of us will ever get to writing decent arcade games.

Chris Jenkins

Programs *GameMaker Designer's Library* (Sports/Commodore 64) Price: £14.99 disc only **Supplier:** Activision, 25 Pond Street, London NW3.

Basic compiler

Whatever your level of programming expertise, there's a lot to be said for compilers. They often give you the taste of a high-level language combined with a speed close to that of machine code.

Of course, the fastest compiled languages have been designed for compilation — such as Pascal and C.

However, unless you're writing arcade games, or other applications in which speed is crucial, Basic can be adequate and a good compiler can reduce irritating pauses to a minimum.

The latest Spectrum compiler has just been released by Hewlett and it is impressive.

Many Basic compilers have a number of faults including the fact that they lag on to the end of your program a large chunk of code containing routines required to execute the

program, and they often require you to choose between integer math (fast but limited) or floating-point (slow).

Hewlett Basic adds only the routines your program needs to run, not a catch-all block of code. And it handles integer or floating-point math as appropriate, giving you the best of both worlds.

The compiler itself takes up only about 11K of memory, so on a 49K Spectrum you can compile a 30K program, write on a Spectrum 128 or Plus-2 you can handle a program up to 40K in length.

Using the program is simple. All commands to the compiler are contained in REM statements in your Basic program. For example, REM: OPEN+ tells the compiler to begin compilation from that line. Typing 'C' begins actual compilation.

Compilation times are adequately fast, the size of your compiled code will not be substantially larger than the simple Basic, and speed improvements may range from about three times to hundreds of times as fast.

Most compilers are also restricted in that they cannot handle all Basic commands and syntax. Hewlett Basic is no exception, but its limitations are not major.

It will not support arrays of more than two dimensions, it won't support system commands such as SAVE, LOAD, etc, and the default attributes for graphics commands are not incorporated.

There is a difference, too, in the way it handles computed GOTOs and GOTOS. The target line number must exist, unlike Basic in which the branch will hit the first line number following the target line.

Personally I don't consider this a limitation as computed branches are poor program-

ming practice, but Spectrum programmers may have to change some old programs to accommodate the loss.

There are a few other differences from Basic, but these are not criticisms. They merely require the addition of an extra compiler instruction. For example, REM: LEN allows you to specify the maximum length of a string.

The Hewlett Basic tape comes with two versions of the compiler. A version specifically for the 128 and Plus-2 has some extra features, notably a menu-driven command system.

If you're a committed Basic programmer, but could use some extra speed in your programs Hewlett Basic is an excellent buy.

Peter Worlock

Programs Hewlett Basic: 128K Spectrum 49K, 128K Plus-2 Price: £15.95 **Supplier:** Hewlett, The Old School, Greenfield, Bedford MK45 5DE.



The Batman routine

Langley Hackers and Tony Kettle bring you another medicine for Batman on the Spectrum

Welcome back to the Langley Hackers with another routine for the excellent GARN. It's the Spectrum version this time and there is absolutely nothing left to the imagination.

The routine includes infant tests, diarrhea bill, infant face saved, birth and

shield (but you lose those last three if you touch a small bomb, which disables everything).

"You also have all the equipment at the start and the barocraft is already assembled. Be careful – if you fall from a great height and you can't jump back up, you will have to start again."

"When you load the tape it will automatically check the data and then save itself. Let this run its course then press any key and play your disaster tape with all its features."

More from this letter next week -- and of course, *Shirley Jones Taylor*.

[illegible][illegible][illegible]

Charts

Top Twenty

1	[15]	World Games	Japan/US Gold
2	[30]	Computer Hit 'n' Hit 3	Boss Jolly
3	[30]	Travel Pursuit	Denmark
4	[30]	180	Mastertron
5	[1-3]	Breakthru	Gate East/US Gold
6	[1-3]	Colony	Ocean
7	[12]	They Said a Million (2)	HR Speed
8	[1-1]	Konami's Cool-as-His	Imagine
9	[15]	Five Star Games	Boss Jolly
10	[44]	Indivision	Mindscape/US Gold
11	[21]	Thrust	Firebird
12	[1-1]	Crystal Castles	US Gold
13	[1-1]	The Great Escape	Ocean
14	[1-1]	Assault	Greenline Graphics
15	[21]	Unidawn	Hayesco
16	[1-1]	1042	Elro
17	[1-1]	Age of Ages	US Gold
18	[21]	Olis and Lisa	Firebird
19	[21]	Ninja Master	Firebird
20	[12]	Raptheon	Elro

22. *Revisions suggested by Editor, 1988*



GOAL! BBC/Electron

The first realistic football simulation for the Electron featuring excellent graphics, music and an intelligent opposition that actually adjusts its skill level during the game depending on current state of play.

Cass. £7.95

FUTURE SHOCK BBC/Electron

An amazing new style of Arcade game with interactive sub plots, using large detailed graphics for superb detail. This game pushes the machine and the player to unparalleled limits for many hours of enjoyment making this a game worth to invest.

Quote from Electron User - December Issue:

"Future Shock is an excellent program, a game which overflows with character and humour." "Overall Rating 5/10"

£7.95 Cass.



WHO DARES WINS II C16/+4

At longlast a conversion for the C16/Multiface 1 Hit that looks up to its original. Over 40 screens of fighting action (more screens than the original 64 versions).

Cass. £7.95

JET SET WILLY II C16/+4, BBC/Electron

Over 90 screens of this classic game will give even the most skilled player the ultimate challenge.

£7.95 Cass.



TYNESOFT
COMPUTER SOFTWARE



The weekly adventurer's fix

New ways to write adventures and new places to read about them, from Tony Bridge

A couple of weeks ago, I spoke about a program called 2001 1/2 from Microtech and some of you may like to know their address. It's Microtech, The Bedouins, 88 Whitley Spring, Chesham, Bucks, West Yorkshire WF5 0HG (0845 339234).

In the same Corner, I also mentioned *Flash*, by David Oya - it may not be immediately obvious that the adventure is initially available for the Amstrad machines.

Both of these adventures were written with *The Gull* and the rumour of a powerful extension to that utility is now fact with the release of the Professional Adventure Writer for FMH and The Press, which will allow for text compression. I haven't seen these add-ons yet, but will report as soon as possible.

However, I have seen the latest version of *Re-Pa* from Kelsoft; it's another add-on for *The Gull*, and briefly, consists of several subprograms which allow for more complex flag-handling and better synonym recognition.

Possibly, *Re-Pa*'s most interesting feature, however, is that it allows for a further two words to be recognised and added upon in a single input. *Re-Pa* has had some success already, but Kelsoft tells me that it has now produced *Mini99* at just £3, which is as its name suggests a cut-down version and contains just the section which handles the expanded parser. Both versions work with *The Flash* and *Illustrator*.

With both programs comes a demonstration database which displays the kind of effects which can be obtained. Although Kelsoft's *FMH* and *Press* will doubtless prove to be indispensable to serious adventure-writers, I'm sure that they will also set you back quite a hefty sum, so if you want to make your *Duff* adventures look a little different, have a look at *Re-Pa* from Kelsoft at 28 Queens Street, Stamford, Lincolnshire PE9 1DS.

I'm glad to see that a program I looked at in the November 13 issue, *Adventure*

Software's uniquely-named *Adventure*, will now be available to a wider public. It will be renamed as *A Son's Tale*, a *Reading of the Original Adventure* and will be released in time for Christmas for just £1.99 on the Players Software label.

In the meantime, Nigel Brooke and his fellow anonymous colleague Solid Hassan, have re-formed as Smart Egg Software and have been commissioned by Mastertronic to write *Saga's Revenge* using the same system that was respon-

sible for *Hollington Way*, Wigan WN3 8LZ.

I've just received the latest copy of its sister magazine, *Adventure Probe*, which is also £1 a copy. Co-editor Sandra Stanley reminds me that a 12-month subscription will lower this figure to 75p. These two magazines contain a lot of feedback from readers in the form of articles and a lively Letters page, which is always a good sign.

I quite often mention enterprises such as this and make no excuse - I feel that it is concerted efforts such as these that keep us adventurers rolling at those difficult games.

And as for solutions, not only are there plenty in the magazine itself, but Sandra also has full solutions for a wide variety of adventures for the princely sum of 15p.

Oh dear, I seem to be back on the subject of *Adventure* magazines - while I am, I should also mention *The Adventurers Club* once more. Henry Mueller is gradually getting this one back on the road to solvency once more.

I've just received the new dossier, which continues much as it left off with the presence of Honorary President Peter Austin of Level 5 this month listing his personal dislikes in adventure - see what he thinks of the competition and as much help and advice as always. Of interest to me was the seventh part of the full solution to *Wentley's Quest*. From this, I've found out that the name of the magazine I've acquired in the Group-dome will be requested later to answer the sales robot's question. Apart from this, there is also the third part of the solution to *Lord of the Rings*, and the complete solution for *Adventuriant*.

Incidentally, Henry tells me (and it has been confirmed elsewhere) that *Rob Watkinson's* *Cheshire*, probably my favourite 'machine', will soon, alas, be no more. If you are a subscriber to the particular bundle of beloved regular magazine and correspondence, then drop a line to Mark offering your services and let's see if we can persuade him to change his mind.



sible for their previous effort. As you'll know, I was fairly impressed with their debut story, and look forward to the next one. Incidentally, it's good to see that some companies at least are putting their back into the icy waters of text-only adventures. Let's hope others follow suit.

While I'm in a 'follow-up' mood, G T Kellard of the aforementioned Kelsoft tells me that *Pa* is a member of *Adventure Corner* (the monthly publication for adventure-writers as much as players) and that the cost of each issue has just risen to £1. Still not bad, I think, though this is one of the few such magazines that are actually worth spending this sort of money on: there's a lot of inside information on the GAC and *Duff* here, from both the editor and from benevolent members willing to share their hard won knowledge with others.

If you're struggling with one of the adventure-writing utilities, you'll find *The Corner* invaluable and required reading. The address, as I've said before, is 13

Brill the Viking. How do you get past the invisible wall? M. Baxter, 180 Rowan Place, Newton Aycliffe, Co Durham DL5 8SL.

Too Little Indians. What do you do with the hammer and chisel and how do you open the large wall safe? Geoff Lintner, 1 Deepdale Drive, Merton Park, Ceshire, Cumbria CA2 5LS.

Morden's Quest on Spectrum. Can't get through invisible barrier or past gladiator. How do I get an axe to dive to underwater basin? D. Dundas, 489 Little Norton Lane, Sheffield, S Yorkshire S20 8SS.

Forestland on Commodore 64. I have lost all the safety match - but where is the box to strike it and Les Austin, 25 Royal Avenue West, Orkney, Isle of Man.

The Price of Magic on Spectrum. How do you command the various monsters in the game? Jason Ross, 2a Balloch View, Salford, Cumberland, Glasgow G67 1HE.

Supernova (Atlantis) on Spectrum. What is the code for Juraquid? Carl Beaumont, 4 Lyndale Grove, Loddish Hall, Preston, Lancs PR5 5XX.

The Hobbit on Spectrum. Once you have the ring, where do you go? How do you get past the spiders? Is it important to get past the spiders? Once out of the goblin's cave, where do you go? How do you get out of the shivering a havel? I have got out of the dungeon by using the red key. PS. Does anyone have any information on Jewels of Babylon, especially how to get out of the forest? Shain Allen, Tugboat, Orps Lane, Gt Bourton, Near Banbury, Oxon OX17 1RL.

Warlord and Morden's Quest on Amstrad CPC464. In Warlord, what do you do with the Romanian Tribal Hiss? get 82%. In Morden's Quest, what do you do with the clay pot, are, clock, axe and the body trapped by the timber? Is Morden's Quest, need

secret words to bribe guards to get out of catacombs. Can't find aqualung. Can offer help on Red Moon, Message from Anachronia, Honor of Ken, Jewels of Babylon, Forest of World's End and Sea-Quest. Christopher King, 14 Avenue Road, London NW11 6AA.

Honour of Ken on Amstrad. How do I get past bear, get tharney, get out of dungeon, and what does Baron def Graham Porter, 10 Westfield Drive, Yeovil, Near Leeds, Yorkshire LS19 7XP.

The Pawn on Atari 520ST. How do you open the safe and where do I find the key for the door in the ice tower? Sandra King, 10 Hole Farm Way, Hoxley, Birmingham B8 9BW.

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair - help is at hand.

Fill in the coupon, explaining your problem, and it will be sent to us, and a fellow adventure may be able to help.

Remember - the system only works if fellow adventurers who have solved the puzzles get in touch. Every week in *Save An Adventure* Today (S.A.A.T.) email:

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Get writing - get Popular

Popular Computing Weekly always welcomes contributions from its readers for articles, features, and program listings. Whether you want to write articles, see your programming masterpieces in print, pass on some words of wisdom, or simply let off steam, there's a space in the magazine for you.

Ideas for **Feature articles**, or completed articles, should be sent to Christine Clarke. All aspects of home computing are considered, but we cannot accept anything longer than 2,000 words, so brief is best. It's worth checking by phone or letter first that your article will be suitable. Payment is normally £25 per published page.

Technical editor Duncan Evans looks after the **program listings**, and articles on programming. We rely on you for our Programming section, so earn yourself a place in the Popular Hall of Fame and £25 for each page (no print) by having your program published. Even if it's not 100% of R, of pure machine code, but a short snappy routine, there may well be a place for it in **Bytes and Pieces** (ETC's slot).

Articles on any aspect of programming are also welcome - with short listings included if relevant.

Got something you feel needs saying loud and clear? Your opinions on any aspect of the computer industry are welcomed, so why not write in to the **Zigzag** section? No more than 600 words, please. If published, we'll pay you £15.

So maybe it's not the money you're after, but you'd just like to have some say in the magazine.

For shorter comments, general observations or queries, there is of course the **Letters page**, with the sampling offer of a year's supply of Popular binders for the Star Letter each week.

For more specific points, our team of columnists are always willing to answer questions, and keen to hear the latest information. Drop your lines to **Tony Bridge** (adventure hints always gratefully received), **Tony Kettle** (who wants as many Amstrad jokes, mags, solutions, etc. as possible), **David Wallis** (communications), **Kenn Garroch** (programming problems), **Mark Jenkins** (music games and sample speed) and **Martin Bryant** (computer chess comments).

All letters should be addressed to Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP. If you mark your letters with the department you want, things get processed much more quickly.



Left: the adventures Tony Bridge.
Right: the active Tony Kettle.



A worthy arcade adventure in Ravenskull

Hand on the heels of the superb *Repton 3*, BBC computers have another treat in store from Superior Software - *Ravenskull*.

This new release is more in the way of traditional arcade adventures, although it is graphically similar to *Repton*.

You play the hero - adventurer, wizard, warrior or elf - who has volunteered to retrieve a mystical cross from the hazardous Castle Ravenskull.

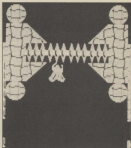
There are many puzzles to be solved - how to manipulate keys and pictures to gain entry to different parts of the maze - and many areas where you'll require arcade

dexterity in avoiding the fast-moving guardians of Ravenskull, the dreaded Ravensbees.

You're also up against a time limit, in that you need to find food and drink to keep your strength up. But beware - some of it is poisoned.

To top off the adventure feel, there are magical potions and scrolls which may help or hinder your quest.

The graphics are clear and colourful, the animation is very smooth, and the sound effects are adequate. There's also a nicely performed background tune which will drive you nuts after one minute. Fortunately, you can turn this off.



I didn't enjoy *Ravenskull* as much as *Repton 3* but it's still worthy of a place in your collection.

Popular Appeal ★ ★ ★
Peter Worlock

Program *Ravenskull* **MS-DOS 800 Price** £19.95
disc Supplier Superior Software, Regent House, Skinner Lane, Leeds LS2 1AX.

Trooper provides a strange mix

Here's one for the record book - a game specifically written for the 128/Plus 2. But for those dividing at the thought of some loquacious right away to the soundtrack, they are going to be disappointed and anything that loquacious! From time to time does not inspire confidence to being exactly state-of-the-art.

In fact, *They Call Me Trooper* is a strange mix of martial art combat and arcade adventure - the two elements being played on separate screens.

It seems that during the high-level talks for Galactic Peace, the Therps have done the dirty on all other sentient beings and put them through a brain-drain machine - turning them into 'dearly exterminated' who are out to get you, the only surviving resident.

The only thing is to find parts of a space ship that are

scattered around the planet and escape.

The first thing you must do is find yourself a rope and grappling hook, essential for those long drops and climbs - not too difficult as there's one on the screen immediately to the right of your starting position, but before you get that far, a green man will try and put the boot in, and off you go to the martial arts bit.

This screen looks excellent with large, single colour sprites - very impressive - in fact, this part can be played as a two-part player game apart from the main scenario.

This would be a first class game were it not for some fundamental faults. Firstly, the terse instructions on the inlay read like they have been hastily translated from the Japanese, and so are completely adequate. More importantly, with the Komotion system on, you cannot manipulate fast objects from the keyboard.

With a little more effort, *Trooper* could have been a first class effort. Instead, I suggest you file it under 'meh'.

Popular Appeal ★ ★
John Cook

Program *They Call Me Trooper* **MS-DOS 128/Plus 2 Price** £9.95
Supplier CPS, 18 Kings Yard, Carpenter's Road, London E17 2HD.

Donkeying Around

Holding up those of you who like *Donkey Kong*? Now, put your hands down if you don't expect to play it over again? Put your hands down if you already have a version for your Commodore 64. Now put your hands down if you're not ready to pay a couple of quid for a decent budget version.

Right, those of you with your hands still up are in business. Because Ocean has just released the official conversion of the Konami arcade classic.

Yes, it is very late (about two years too late), and yes,

there are tons of cheaper, not-quite-identical versions.

But this is the real thing. The graphics are almost as good as the arcade original, the sound track is perhaps a bit better. And it plays extremely well.

You don't care? Oh well.
Popular Appeal ★ ★ ★
Peter Worlock

Program *Donkey Kong* **MS-DOS 64 Price** £9.95
Supplier Ocean, Ocean House, 6 Central Street, Manchester M2 5MS.

The Three Musketeers

Team up with **THE THREE MUSKETEERS**, Dumas' legendary crusaders for justice and freedom and fence your way to England to collect the missing diamonds!

NOW RELEASED ON
COMMODORE 64, 128 & AMIGA

Commodore 64 - Tape £29.95 - £56, £24.95

Commodore 128 (with enhanced graphics) - Tape £39.95 - £64, £24.95

Commodore Amiga - £64, £24.95

COMING SOON FOR

Orion Spectrum - Tape £29.95

Amstrad CPC - Tape £29.95 - £64, £24.95

Apple II Series - £64, £24.95

Apple Macintosh - £64, £24.95



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A joystick for your thoughts

If you committed the cardinal sin of missing last week's issue, here is a second chance to make your opinions known in the third Annual Readers' Poll.

This is your opportunity to name winners and vote for your personal best and worst of 1995 — games, utilities, programmers, hardware.

This year we've got an added incentive to get you to fill out

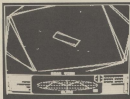
the form. We've got 50 Konix Speed King joysticks to give away to 50 lucky entrants picked at random on the closing date.

As this is an annual poll, we're looking for 1995 products only. However, anything launched in November or December 1995 should be OK, since most of their sales will have been this year.

Program of the Year (overall)

Last year's winner: *Elite* (Firebird)

This is the highest accolade you can pay a computer program, the game that had you hooked to the screen for weeks on end, or the utility which transformed your computing powers, or the application which infinitely expanded your horizons.



Last year's winning program, *Elite*

Please write answers in the boxes below

Arcade Games of the Year

Last year's winner: *Elite* (Firebird)

Shoot 'em ups, arcade adventures, basically anything that you'd get the joystick out for. But which one really brought out the sweat on your brow and gave you sleepless nights?

Simulation of the Year

New category

A wide variety here — flying, martial arts, athletics, motor racing, space travel. Cast your vote for the most addictive and realistic simulation of all.

Adventure Game of the Year

Last year's winner: *Lord of the Rings* (Mallorn House)

Tingling with atmosphere, fraught with heretofore puzzles, an absorbing plot... we're looking for the best adventure of them all.

Business Program of the Year

Last year's winner: *Mail Office* (Baldaxe)

More people are using their money for some form of business use, whether domestic accounts, club memberships, or full-blown spreadsheets and databases. We want to hear about the one that transformed your business.

Utility Program of the Year

Last year's winner: **The Art Studio (Rainbird)**

Programming languages, machine code monitors, graphics aids, word processors, communications software, the list is ever increasing. Is there a gem of a program which deserves this award? Which is it?

Peripheral of the Year

Last year's winner: **AMX mouse**

Your chance to vote for the add-on which made you wonder how you ever survived without it.



AMX Mouse

Best Software House

Last year's winner: **Melbourne House**

Consistency and excellence is what we're after here. The company whose programs you look out for, because you know they're going to be great.

Best Programmer

Last year's winner: **Ray Carter and Greg Fells (Gargyle Games)**

It could be their graphics, their sound, their plotting, or the overall style. Who is the programmer, or programming team you most admire?

Most Exciting New Computer

Last year: **Amstrad CPC 6128**

Plenty of launches this year to choose from - the Amiga, the 1280, the 1640 from Commodore, Acorn's Master series and Master computer, the Amstrad PC and Spectrum Plus 2, a new Zenith, and the game consoles are on their way back.

Most Overrated Software House

Last year: **Ultimate**

The advertising is brilliant. The managing director appears on telly. Your friends have library posters of the in-house programmers on their bedroom walls. The product packaging makes you gasp. The releases are always a disappointment. Stand up and be counted here.

Computer program you Most Regretted Buying in 1986

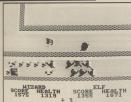
Last year: **A Flow to a KB (Bemart)**

Somebody told you it was the best thing since sliced bread. You looked it up, trembling with anticipation... and what a let-down. Name names in this section.

Please send in your completed poll form if you don't feel qualified to vote in one or two of the sections, don't worry, just leave it blank to Readers' Poll. Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3PP, to reach us by Wednesday, December 10. The results will be published in the issue dated December 18.

Name

Address



The licensing deal of the year they called it. This was it, the big one. It was odds-on to be top of the charts at Christmas – almost before the programming began.

You've seen the adverts, poured thousands into the arcade machine... In fact US Gold even gave you the chance to wear the T-Shirt if you enter their 'Design a Dungeon' competition.

Now we have the finished (Amstrad CPC) version of Gauntlet, the home computer game.

In case you are not a follow-

er of these things – perhaps recently returned from a five-year expedition in Nepal – Gauntlet deserves some explanation.

When it hit the British arcades last year, it caused a sensation like those haven't been for a long, long time. It had advanced graphics and some real digitised sound, but the real thing that had the punters queuing up was the fact that it was multi-player.

Up to four players could be on the machine at any one time, each taking the role of a different character: a primitive kind of arcade Dungeons &

Running the Ga

Dragons. Well over 9,000 machines later Gauntlet established itself as an arcade smash, and so became a natural target for conversion to home micros.

The sceptics said it couldn't be done. The reality said it didn't matter how it was done, as long as it had the same Gauntlet on the cassette box.

The first of the many rumours to surround the game and its programming team (which included the opinion that the game would never make it for Christmas) was that the idea of more than two players on screen was a veto.

Not even the might of Grimsby Graphics (back-contracted by US Gold) Centech to convert the thing could weld four joystick ports on every target machine, so they settled for the one/two player option, each player selecting their character from one of the original four: Thor the Warrior, Thira the Valkyrie, Merlin the Wizard and Guss-

ter the Elf. Each has advantages and disadvantages.

The Elf is fast and good at using magic potions, but is a bit of a wimp when it comes to hand-to-hand combat. The Warrior throws a mean battle axe and can take quite a bit of punishment from the monsters – but can't tell his name from his pentagrams. Note that unlike Gauntlet II which has just reached the arcades, only one of each character type can take part in the game.

Having made your choice, away you go and transported to Level One of the dungeon. Quite simple, each level of the dungeon is a monster-infested maze which you must hack your way through to reach an exit to a lower level. The lower the level, the harder and nastier the monsters. Guss makes an appearance after a while – a black figure who can only be slain using a magic potion.

The puzzle element of the game also starts to come into play after a while – when the

Destruction in the Pacific

Simulations are a time-honoured part of software history – both for real applications and for entertainment.

We've had aircraft, space-ships, wars and submarines. None, as far as I know for the first time, there's a simulation of commanding a naval destroyer.

Called, appropriately enough, *Destroyer*, it puts you

in command of a US ship in the Pacific during World War II.

The game itself is played on ten different screens showing navigation, bridge, damage control, radar and sonar, and all your weapons systems.

You can take direct control of any of these areas, or trust your crew to handle things while you play the cool commander's role.

On every screen, there's a communications line which will display messages from different crew stations.

You also have a wide choice of missions: convoy escort, onshore bombardment, rescuing a downed pilot, hunting submarines, and screening the fleet from air

attacks.

Different missions have varying degrees of difficulty. A screening mission is easy since you don't have to move – you simply try to shoot down the attacking planes. Convoy escort is a real test since you'll be up against planes, subs and enemy battleships, and you'll need to control radar, sonar and all weapons systems.

As you'd expect from Epox, the graphics are stunning – lots of metallic control panels and twinkling lights. Perhaps the most impressive graphics are on the air-track screens where enemy planes roar at you with stunning realism, and when shots will spin and plummet into the ocean, making smoke.

The major disappointment is the sound. 'Minimal' is hardly the word. When you're blasting the hell out of an enemy ship, all you hear is a pathetic "Xisk, Xisk" as your

main five inch guns blast away.

Where are the throbs of your engines, the screaming dies of Japanese Zero bombers, the boom of heavy armament and the rattle of machine guns?

The only other complaint is the inability to save your ship's log so that you start from scratch each time you play.

Had these features been included, *Destroyer* would have been a five-star classic.

As it is, it's merely very good. Nice to see Epox back on form after the disappointing *World Genus*.

Popular Appeal ★ ★ ★
Peter Workook



e Gauntlet

masses get complicated and you have to start knocking down walls to get anywhere.

Time is important. You start off with 2000 strength points but the stress of being surrounded by all these points mean it's counting down all the time (just like real life, morales) and when you get hit by the opposition it goes down even faster.

Strength can be regained by collecting food found lying around the place, so playing the two player game you get to know who your friends are pretty quickly as you both make a grab for the goodies.

And no fantasy trip would be complete without treasure, would it? Gauntlet is no exception, and collecting it will increase your score - so



does lying in the millions.

Gauntlet the computer game passes the conversion test easily. At least as good as it could be on a home mixer. Best played with two of you, shouts of 'Cover me, Boker!'. All the more and it's not a bad romp as you give thousands of evil things exactly what's coming to them.

Gauntlet was never about intellect - just hit that fire button and take them apart. And there is the possibility that without the puzzle elements of some games of a similar genre (say, Duck!) or the flashy effects of the stand-alone, there won't be much to hold you for a long period of time.

But make no mistake, if you want to play Gauntlet, no title, on your home computer this Christmas (and although we've only seen the CPC version, there's no reason why the others shouldn't be of a similar standard) - US Gold has delivered the goods. **Regular Appeal 4+4**

John Cook

Program Gauntlet Micro
Available CPC (C&M 64, Atari XL/XE), MSX, Spectrum, ST, Amiga and PC versions in follow: Price £9.99 (hard) £14.99 (disk)
Supplier US Gold, Unit 2/3, Hatfield Way, Hatfield, Birmingham B8 7AX

Phantastic Phantasie

It's a hard life adventuring in Gelnor. Trudging back from a firing day down the local dungeons, eagerly anticipating a good time at the local town's guild, and what jumps out, monsters baring! An orange dragon of all things! Oomp.

Phantasie is the name of this game and defeating the evil sorcerer is the aim.

If you hadn't realised by now, Phantasie (by Strategic Simulations) is a role playing game where you create and lead a party of up to six characters from a variety of races: dwarf, elf, gnom, and classic (priest, warrior, ranger, wizard - you know the sort of thing) and set off into the countryside with the aim of searching out Mikaelmus and paying him his dues.

Of course it isn't that straightforward. After a few plays it appears that you only have to kill things, gain experience, pay for training to in-

crease your hit points and skills, and find Mikaelmus in order to accomplish your aim. After many more hours at the keyboard the truth of the matter dawned. There is far more depth to Phantasie than is initially apparent. Take the matter of the rings for example. You have to have all nine in order to get a stat at the sorcerer, but where are they? Well, scattered about the land are various scrolls which reveal many important (and some not so) facts.

In one dungeon you have to discover the secret phrase to see to a cook when he asks you about Miknor the dwarf. The cook tells you to say something else to Miknor when you meet him, and when you do and quote the right words he tells you the secret number to get into the inner sanctum of the Temple of Gelnor without being vapourised. Doing this opens a secret passage way into a

nearby fountain wherein lies the elusive scroll 15.

The graphics of the maps are not great, but the close ups of the party and monsters in a combat situation are very nicely done with some of the larger monsters being very impressive. Sound effects are minimal but that's to be expected in this sort of game.

If you can survive the initial battles, and put up with reading through low level monsters when you're on the trail

of a vital clue, then you'll discover for yourself what an addictive and wonderful game Phantasie is. Now then, where did I put that Hallow?

Regular Appeal 4+4+4
Suzanne Evans

Program Phantasie Micro
Atari ST Price £29.99 (disk only) **Supplier** Glaze Shop, Ltd. The Mews, Harborne Road, Solihull, East DA14 4DX



Teletext Designer

W. D. Gurnea

This utility program is used to design pictures in Teletext mode 7. Full colour, inset graphics and text can be mixed by using a combination of the Function, Shift, and Control keys on

provides the information needed to

True, I have missed many

Tabl. 1. — *See next page for description of table.*

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 399–406

10 *Journal of Management Studies*, 1996, 33, 1031-1046

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

— **1998** —

[illegible]

Figure 2

Figure 6

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

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Figure 6

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1997: <http://www.fishbase.org>

H = mean back ground (mean height, weight, systolic blood pressure)

CONTACT

iii. *Chlorophyll fluorescence* (Fv/Fm) was measured using a Fv/Fm fluorometer (Fv/Fm-100, J. A. Hansa, San Francisco, CA, USA) and was used as an indicator of photosynthetic activity.

[illegible]

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

5. <http://www.fishbase.org>

2. **RESEARCH DESIGN**

© 2000 by John Wiley & Sons, Inc.

It is important to note that all the control characters take up one character square so that square will be left blank. It is probably easier to draw a design in white and then carefully add the colour and text afterwards.

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1000:00000000
200:00000001
00000007
4000000000000000:00000000 OFF
50000007
60:000000000000:00000000 IF TABLE 70
7000:00000000
800000000000:00000000 IF
90:000000000000
100000000000:00000000 IF
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120000000000:00000000 IF
130000000000:00000000 IF
140000000000:00000000 IF
150000000000:00000000 IF
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170000000000:00000000 IF
180000000000:00000000 IF
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*F001 *F002 *C003 *C004 *P005 *P006 *C007 *C008
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C799 C800 C801 C802 C803 C804 C805 C806 C807 C808
C809 C810 C811 C812 C813 C814 C815 C816 C817 C818
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C939 C940 C941 C942 C943 C944 C945 C946 C947 C948
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C979 C980 C981 C982 C983 C984 C985 C986 C987 C988
C989 C990 C991 C992 C993 C994 C995 C996 C9
```

Programming: QL

Joystick function

David S. Gutzwiller

This short program will return a value from a joystick connected to Ctl 1 or Ctl 2, the values being the same for each point. There is only one parameter required for the function, the port number. `A=Joy(1)` reads Ctl 1 and `A=Joy(2)` reads Ctl 2.

As the CIL gets inside the keyboard, this program will read the function keys, cursor keys and space bar as well.

The following diagram illustrates which values are returned when the joystick is in each position. The cursor keys and space use `Joy(1)` while the function keys use `Joy(2)`. When the fire button is pressed add 10 to the values on the diagram.

[illegible][illegible]

20000	17	us:Missouri:Jefferson
20001	17	us:Missouri:Jefferson
20010	02	
20020	17	us:Missouri:Jefferson
20030	17	us:Missouri:Jefferson
20040	17	us:Missouri:Jefferson
20050	17	us:Missouri:Jefferson
20060	17	us:Missouri:Jefferson
20070	17	us:Missouri:Jefferson
20079	00	Missouri
20080	00	Missouri
20090	00	Missouri

Head Control

Age Group	Gender	Percentage (%)
18-29	Male	~45
	Female	~55
30-49	Male	~55
	Female	~65
50-69	Male	~65
	Female	~75
70+	Male	~75
	Female	~85

This program allows the boarders of all 50 states and files no tax restrictions.

On occasion the many projects these children lead, save and serve.

Headsets can be loaded and stored in the same way as normal programs.

Assigning the header is a simple process of redefining its characteristics. This includes, length, type of file, start address, subprogram, and language.

The program has many uses, one of which is stopping target programs from automatically restarting.

[illegible][illegible][illegible]

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Sembler

Andrew Robinson

When the cold winter nights now upon us, what could be nicer than warming your hands over a hot computer. Serenity will give you that opportunity with its combination of excellent port design and exceptional

(On running the program a prompt will be displayed). The three letter commands that are used are given below:

John — *couldn't come to the meeting because he was*

Get = puts you into the dissonance mode.

Just as we have seen that a necessary law has no ground, it

then outputs the April value of each character in hex and decimal.

Cal — asks for number then calls the service at that address

Also — converts a decimal number to hex

Dec - converts a hex number to decimal

When the assembler routine is in use the start address can range from 9000 to 40163 (8C000). When entering data or mnemonics make sure that there is a space between the mnemonics and the numbers (which can be entered in decimal or hex). Press enter at the end of every line and to finish assembling press enter again.

The second and final part of the listing will be published next week.

[illegible][illegible]

```

200 0=1:FOR I=1 TO LEN(M)
210 IF MID(M,I,1) = "0" OR MID(M,I,1) =
220 "1" THEN GOTO 410
230 M=M+MID(M,I,1)
240 NEXT I
250 0=0:FOR J=1 TO 255
260 IF MID(M,J,1) = "0" THEN J=J+1:GOTO 250
270 J=J-1:FOR K=1 TO 255
280 IF MID(M,K,1) = "0" THEN K=K+1:GOTO 280
290 K=K-1:FOR L=1 TO 255
300 IF MID(M,L,1) = "0" THEN L=L+1:GOTO 300
310 L=L-1:FOR P=1 TO 255
320 IF MID(M,P,1) = "0" THEN P=P+1:GOTO 320
330 P=P-1:FOR Q=1 TO 255
340 IF MID(M,Q,1) = "0" THEN Q=Q+1:GOTO 340
350 Q=Q-1:FOR R=1 TO 255
360 IF MID(M,R,1) = "0" THEN R=R+1:GOTO 360
370 R=R-1:FOR S=1 TO 255
380 IF MID(M,S,1) = "0" THEN S=S+1:GOTO 380
390 S=S-1:FOR T=1 TO 255
400 IF MID(M,T,1) = "0" THEN T=T+1:GOTO 400
410 T=T-1:FOR U=1 TO 255
420 IF MID(M,U,1) = "0" THEN U=U+1:GOTO 420
430 U=U-1:FOR V=1 TO 255
440 IF MID(M,V,1) = "0" THEN V=V+1:GOTO 440
450 V=V-1:FOR W=1 TO 255
460 IF MID(M,W,1) = "0" THEN W=W+1:GOTO 460
470 W=W-1:FOR X=1 TO 255
480 IF MID(M,X,1) = "0" THEN X=X+1:GOTO 480
490 X=X-1:FOR Y=1 TO 255
500 IF MID(M,Y,1) = "0" THEN Y=Y+1:GOTO 500
510 Y=Y-1:FOR Z=1 TO 255
520 IF MID(M,Z,1) = "0" THEN Z=Z+1:GOTO 520
530 Z=Z-1:FOR AA=1 TO 255
540 IF MID(M,AA,1) = "0" THEN AA=AA+1:GOTO 540
550 AA=AA-1:FOR AB=1 TO 255
560 IF MID(M,AB,1) = "0" THEN AB=AB+1:GOTO 560
570 AB=AB-1:FOR AC=1 TO 255
580 IF MID(M,AC,1) = "0" THEN AC=AC+1:GOTO 580
590 AC=AC-1:FOR AD=1 TO 255
600 IF MID(M,AD,1) = "0" THEN AD=AD+1:GOTO 600
610 AD=AD-1:FOR AE=1 TO 255
620 IF MID(M,AE,1) = "0" THEN AE=AE+1:GOTO 620
630 AE=AE-1:FOR AF=1 TO 255
640 IF MID(M,AF,1) = "0" THEN AF=AF+1:GOTO 640
650 AF=AF-1:FOR AG=1 TO 255
660 IF MID(M,AG,1) = "0" THEN AG=AG+1:GOTO 660
670 AG=AG-1:FOR AH=1 TO 255
680 IF MID(M,AH,1) = "0" THEN AH=AH+1:GOTO 680
690 AH=AH-1:FOR AI=1 TO 255
700 IF MID(M,AI,1) = "0" THEN AI=AI+1:GOTO 700
710 AI=AI-1:FOR AJ=1 TO 255
720 IF MID(M,AJ,1) = "0" THEN AJ=AJ+1:GOTO 720
730 AJ=AJ-1:FOR AK=1 TO 255
740 IF MID(M,AK,1) = "0" THEN AK=AK+1:GOTO 740
750 AK=AK-1:FOR AL=1 TO 255
760 IF MID(M,AL,1) = "0" THEN AL=AL+1:GOTO 760
770 AL=AL-1:FOR AM=1 TO 255
780 IF MID(M,AM,1) = "0" THEN AM=AM+1:GOTO 780
790 AM=AM-1:FOR AN=1 TO 255
800 IF MID(M,AN,1) = "0" THEN AN=AN+1:GOTO 800
810 AN=AN-1:FOR AO=1 TO 255
820 IF MID(M,AO,1) = "0" THEN AO=AO+1:GOTO 820
830 AO=AO-1:FOR AP=1 TO 255
840 IF MID(M,AP,1) = "0" THEN AP=AP+1:GOTO 840
850 AP=AP-1:FOR AQ=1 TO 255
860 IF MID(M,AQ,1) = "0" THEN AQ=AQ+1:GOTO 860
870 AQ=AQ-1:FOR AR=1 TO 255
880 IF MID(M,AR,1) = "0" THEN AR=AR+1:GOTO 880
890 AR=AR-1:FOR AS=1 TO 255
900 IF MID(M,AS,1) = "0" THEN AS=AS+1:GOTO 900
910 AS=AS-1:FOR AT=1 TO 255
920 IF MID(M,AT,1) = "0" THEN AT=AT+1:GOTO 920
930 AT=AT-1:FOR AU=1 TO 255
940 IF MID(M,AU,1) = "0" THEN AU=AU+1:GOTO 940
950 AU=AU-1:FOR AV=1 TO 255
960 IF MID(M,AV,1) = "0" THEN AV=AV+1:GOTO 960
970 AV=AV-1:FOR AW=1 TO 255
980 IF MID(M,AW,1) = "0" THEN AW=AW+1:GOTO 980
990 AW=AW-1:FOR AX=1 TO 255
1000 IF MID(M,AX,1) = "0" THEN AX=AX+1:GOTO 1000
1010 AX=AX-1:FOR AY=1 TO 255
1020 IF MID(M,AY,1) = "0" THEN AY=AY+1:GOTO 1020
1030 AY=AY-1:FOR AZ=1 TO 255
1040 IF MID(M,AZ,1) = "0" THEN AZ=AZ+1:GOTO 1040
1050 AZ=AZ-1:FOR BA=1 TO 255
1060 IF MID(M,BA,1) = "0" THEN BA=BA+1:GOTO 1060
1070 BA=BA-1:FOR BB=1 TO 255
1080 IF MID(M,BB,1) = "0" THEN BB=BB+1:GOTO 1080
1090 BB=BB-1:FOR BC=1 TO 255
1100 IF MID(M,BC,1) = "0" THEN BC=BC+1:GOTO 1100
1110 BC=BC-1:FOR BD=1 TO 255
1120 IF MID(M,BD,1) = "0" THEN BD=BD+1:GOTO 1120
1130 BD=BD-1:FOR BE=1 TO 255
1140 IF MID(M,BE,1) = "0" THEN BE=BE+1:GOTO 1140
1150 BE=BE-1:FOR BF=1 TO 255
1160 IF MID(M,BF,1) = "0" THEN BF=BF+1:GOTO 1160
1170 BF=BF-1:FOR BG=1 TO 255
1180 IF MID(M,BG,1) = "0" THEN BG=BG+1:GOTO 1180
1190 BG=BG-1:FOR BH=1 TO 255
1200 IF MID(M,BH,1) = "0" THEN BH=BH+1:GOTO 1200
1210 BH=BH-1:FOR BI=1 TO 255
1220 IF MID(M,BI,1) = "0" THEN BI=BI+1:GOTO 1220
1230 BI=BI-1:FOR BJ=1 TO 255
1240 IF MID(M,BJ,1) = "0" THEN BJ=BJ+1:GOTO 1240
1250 BJ=BJ-1:FOR BK=1 TO 255
1260 IF MID(M,BK,1) = "0" THEN BK=BK+1:GOTO 1260
1270 BK=BK-1:FOR BL=1 TO 255
1280 IF MID(M,BL,1) = "0" THEN BL=BL+1:GOTO 1280
1290 BL=BL-1:FOR BM=1 TO 255
1300 IF MID(M,BM,1) = "0" THEN BM=BM+1:GOTO 1300
1310 BM=BM-1:FOR BN=1 TO 255
1320 IF MID(M,BN,1) = "0" THEN BN=BN+1:GOTO 1320
1330 BN=BN-1:FOR BO=1 TO 255
1340 IF MID(M,BO,1) = "0" THEN BO=BO+1:GOTO 1340
1350 BO=BO-1:FOR BP=1 TO 255
1360 IF MID(M,BP,1) = "0" THEN BP=BP+1:GOTO 1360
1370 BP=BP-1:FOR BQ=1 TO 255
1380 IF MID(M,BQ,1) = "0" THEN BQ=BQ+1:GOTO 1380
1390 BQ=BQ-1:FOR BR=1 TO 255
1400 IF MID(M,BR,1) = "0" THEN BR=BR+1:GOTO 1400
1410 BR=BR-1:FOR BS=1 TO 255
1420 IF MID(M,BS,1) = "0" THEN BS=BS+1:GOTO 1420
1430 BS=BS-1:FOR BT=1 TO 255
1440 IF MID(M,BT,1) = "0" THEN BT=BT+1:GOTO 1440
1450 BT=BT-1:FOR BU=1 TO 255
1460 IF MID(M,BU,1) = "0" THEN BU=BU+1:GOTO 1460
1470 BU=BU-1:FOR BV=1 TO 255
1480 IF MID(M,BV,1) = "0" THEN BV=BV+1:GOTO 1480
1490 BV=BV-1:FOR BW=1 TO 255
1500 IF MID(M,BW,1) = "0" THEN BW=BW+1:GOTO 1500
1510 BW=BW-1:FOR BX=1 TO 255
1520 IF MID(M,BX,1) = "0" THEN BX=BX+1:GOTO 1520
1530 BX=BX-1:FOR BY=1 TO 255
1540 IF MID(M,BY,1) = "0" THEN BY=BY+1:GOTO 1540
1550 BY=BY-1:FOR BZ=1 TO 255
1560 IF MID(M,BZ,1) = "0" THEN BZ=BZ+1:GOTO 1560
1570 BZ=BZ-1:FOR CA=1 TO 255
1580 IF MID(M,CA,1) = "0" THEN CA=CA+1:GOTO 1580
1590 CA=CA-1:FOR CB=1 TO 255
1600 IF MID(M,CB,1) = "0" THEN CB=CB+1:GOTO 1600
1610 CB=CB-1:FOR CC=1 TO 255
1620 IF MID(M,CC,1) = "0" THEN CC=CC+1:GOTO 1620
1630 CC=CC-1:FOR CD=1 TO 255
1640 IF MID(M,CD,1) = "0" THEN CD=CD+1:GOTO 1640
1650 CD=CD-1:FOR CE=1 TO 255
1660 IF MID(M,CE,1) = "0" THEN CE=CE+1:GOTO 1660
1670 CE=CE-1:FOR CF=1 TO 255
1680 IF MID(M,CF,1) = "0" THEN CF=CF+1:GOTO 1680
1690 CF=CF-1:FOR CG=1 TO 255
1700 IF MID(M,CG,1) = "0" THEN CG=CG+1:GOTO 1700
1710 CG=CG-1:FOR CH=1 TO 255
1720 IF MID(M,CH,1) = "0" THEN CH=CH+1:GOTO 1720
1730 CH=CH-1:FOR CI=1 TO 255
1740 IF MID(M,CI,1) = "0" THEN CI=CI+1:GOTO 1740
1750 CI=CI-1:FOR CJ=1 TO 255
1760 IF MID(M,CJ,1) = "0" THEN CJ=CJ+1:GOTO 1760
1770 CJ=CJ-1:FOR CK=1 TO 255
1780 IF MID(M,CK,1) = "0" THEN CK=CK+1:GOTO 1780
1790 CK=CK-1:FOR CL=1 TO 255
1800 IF MID(M,CL,1) = "0" THEN CL=CL+1:GOTO 1800
1810 CL=CL-1:FOR CM=1 TO 255
1820 IF MID(M,CM,1) = "0" THEN CM=CM+1:GOTO 1820
1830 CM=CM-1:FOR CN=1 TO 255
1840 IF MID(M,CN,1) = "0" THEN CN=CN+1:GOTO 1840
1850 CN=CN-1:FOR CO=1 TO 255
1860 IF MID(M,CO,1) = "0" THEN CO=CO+1:GOTO 1860
1870 CO=CO-1:FOR CP=1 TO 255
1880 IF
```


Programming: Commodore 64

[illegible]

Clock

2. Theorem

These two routines for the Spectrum will set up a clock facility. Use Gosub 5000 to first set the clock and thereafter, Gosub 5005 to print the time.

The lines can be renumbered and placed into your own programs.

[illegible]

Variables

A Division

This subscription for the Spectrum lists all the variables currently in use. To use effectively the routine, merge it with your Basic program and then enter Goto 9700.

[illegible]

```

3000 IF BPTS=180 THEN PRINT CH
4000 BPTS=180+900:GO SUB 5710
5000 LET J=90 NEXT I
6000 IF BPTS=180 THEN PRINT CH
7000 BPTS=180+900:PRINT: LET J=0
8000 GOTO 11-1000+GOTO 11-20-30+
END I
9110 PRINT "END" :GOTO 1000-200
9200 LET J=9000 NEXT I
9310 FOR J=90 TO 90000 LET BPTS
TO 9000:J=J+1 IF BPTS=120 THEN J
9400 BPTS=180+1200:PRINT CH:G
9500 PRINT
9600 PRINT CH:GOTO 9000:J=J+1

```

Multi Colour Pause

References

This routine for the Vic 20 creates a multicolour border around the Vic screen while waiting for a key to be pressed. Applications include for use on title pages etc. The routine is called from within the program using a `Go 828` command.

Lines 1 to 4 contain the machine-code, lines 5 to 7 merely show what is available.

```

1 DATA173,15,144,133,99,41,245,133,100,165,100,
2 142,15,144,162,3,140,23,136,208,3 58
3 DATA202,208,248,145,197,201,44,200,14
4 174,15,144,138,229,100,201,7,240,225
5 DATA232,75,71,5,145,99,141,15,144,96
6 C=0:FOR=22070677:READ=1:FOR=2,4:C=C+1
7 NEXT I:FOR=66207:READ=1:ERROR=1:STOP
8 POKE36245,60:POKE36247,142:POKE36277,5
9 PRINT"END COLOURFUL BORDER MOD"
10
11 JULY 1986 BY M.J.DAVIES"POKE169,0
12
13 SYS202:POKE195,0:POKE36265,204:POKE36247
14 ,144:PRINT"END POKE36277,37

```

We want your programs!!

Yes, this is your chance to get rich and famous. Well, famous anyway, as *Magazine Computing Monthly* is looking for contributors to the *Personalizing* column.

What sort of thing are we looking for? You name it - anything original from games to utilities, applications and the like, written in Basic, machine code or anything else you can think of.

Programs for any computer will be considered, not just the old mainframes.

Spectrum, Amstat, GL, Commodore, etc), so send those listings in. What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 7000 words.

Alternatively, David's just short programs in the Byers and Pines pages — what would his answer?

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2PP and we'll assess them over time.



With Ken Garroch

Random queries

Allan Hyde, of *Numbert*, Leicester, writes:

Q I am currently writing a computer game that requires random movements and I would like to know how to generate random numbers.

A Computers, being what they are, cannot generally generate truly random numbers. The closest they can get is so-called pseudo random sequences. These are sets of numbers that are only random for a certain period, after which they repeat. A simple way of creating these is as follows:

- 1) take a 6-bit number
- 2) look at bits 2 and 7 and exclusive or their values
- 3) rotate the 8-bit value left times two and with the result of the XOR in as the new first bit.

Take 01001001 bits 2 and 7 are 0 and 1. The exclusive OR of these is 1 so the original times two is 10010010 and with the new first bit is 1 so the result is 10010011. Continually doing this will give a pseudo binary random sequence. A simple machine code program to do this in 6502 is shown below. RALM is the starting number or seed, watch out for values such as 0 or 128 which won't work. If you need a longer sequence, use two or more bytes in and take the 15th or greater bit.

```

RMLM  RTT L&H
RMLM  LDA #3
RTT  RMLM
RMLM  ROR RMLM
LDA #4
RTT  RMLM
    
```

```

RMLM  RTT
CLC
ROL RMLM
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
RTT
    
```

The disc drive dilemma

J. Johansson of *Wokingborough, Northamptonshire*, writes:

Q I have had my BBC Micro for some time now and have finally decided that it is worth upgrading to a disc system. What I would like to know is if there are any advantages in going for a 3 1/2 inch drive rather than the more normal 5 1/4 inch system.

A As far as storage capacity goes, there is little difference between the two standards. The 3 1/2 inch diskettes have the advantage that they are a lot more durable than their 5 1/4 inch counterparts. You can throw them around the room if you feel the urge without damaging them and they are small enough to fit into a pocket.

5 1/4 inch discs are not as tough but they are a lot more standard for the BBC. Almost all of the commercial software available for the machine comes on 5 1/4 inch discs and they cost about half the price of blanks. So unless you are not going to purchase software, you are far better off going for a 5 1/4 inch disc drive than the more modern and compact 3 1/2 inch.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem **Peek & Poke** to Ken Garroch and every week he will **Poke** back as many answers as he can. The address is **Peek & Poke, PCW, 12-13 Little Newport Street, London WC2N 3LD**

Fractal graphics for the CPC

J. Johansson of *Wokingborough, Northamptonshire*, writes:

Q I am a relative newcomer to computers having used one at work, and recently bought an Amstrad CPC 6128. I have seen the word Fractal mentioned in the computer press quite frequently. My question is, what is one of these and what are they used for?

A A Fractal is the mathematical concept of an object having fractional dimensions. For instance, a line connecting two points has one dimension, a set of lines side by side in a plane have two dimensions, three dimensions is obtained by stacking a set of planes on top of each other to form a solid.

Alternatively, rotate the line around its corner and it describes a plane, rotating the plane at right angles to its other two dimensions describes a solid.

Normal mathematical geometry treats dimensions as being continuous as a length is measured as being a specific size and it describes the thing as a whole.

Fractal geometry treats things in a different way by describing the dimension or shape in terms of how closely it is examined. For example, take a map of an island, and examine the coast. As you get closer and closer, the coast becomes more detailed. If you then take a larger scale map of the same area, the detail increases.

Taking this to its extreme, you could go to the place itself and look at the detail which is still as complex and

can be said to have a fractional dimension since it is never absolutely defined.

The same idea can be applied via some mathematical formulas such as the famous Mandelbrot set; no matter how closely you look, or in the case of a formula, evaluate it, there is always more detail to be revealed. An example is the square root of 2 or the value of π . If you extract the square root of 2, no matter how many times you work it out, you will be able to add more decimal places, effectively describing the value in more and more detail.

The same method can be applied to a formula that describes the shape of an object, the more you evaluate certain portions, the more detail will be revealed. Just like drawing a map in more and more detail but without ever running into problems with the resolution of the paper.

As for uses, Fractals can be used to produce pretty patterns, or they could be used in a computer game to allow 'zoom in' effects. This cuts down the amount of data that needs to be stored about an object, all that is needed is the formula which needs to be evaluated a specific number of times to get the required detail.

Other than that, Fractals are, to a certain extent, nothing more than a mathematical curiosity arising from the fact that computers can perform the many calculations necessary to produce them.

Because of this last aspect, they are frequently used to demonstrate the speed of a computer. To produce a section of the Mandelbrot set can take a day or so with a normal home micro, but on something like a transputer, the same thing can be done in seconds.

For additional, and more in-depth information on this subject, the following will provide it:

Musical Fractals, *Syn*, June 1986.

Personal Computer World, December 1985.

The Fractal Geometry of Nature by B. B. Mandelbrot, W. H. Freeman.

Advanced Graphics with the Commodore 628, Macmillan.

Trading on adventure

David Wallin takes a techno-fresh view on the game of life

On the Bulletin boards scene, I've been asked to mention one, which although not new is worth a look at.

Techno Fresh Systems is about a year old and based in Wales. It has all the usual features of telesoftware, messaging, Sigs, etc. and has just recently started two on-line games. One is a simple higher/lower gambling game (no real money involved) - apart from your phone bill; the other is called *Mercenary* - Game of Life, a trading game.

Techno Fresh is planning to implement an on-line adventure, once it has made some extensive software modifications to the board. The adventure will be called *Seafarer's Seaside Adventure*, and is being written by co-sysop Keith Anderson.

BBC owners will receive all the Techno Fresh news in mode 7 colour - this is not standard but BBC protocol, 4D software, scrolling colour graphics and text. The character set is roughly the same as standard's.

Users may write and upload articles and reviews for publication on the board and sysop Dave Dickinson says that he is

**"Techno Fresh is
planning to implement
an on-line adventure
by co-sysop
Keith Anderson"**

willing to help prospective sysops and give advice if need be.

Techno Fresh is on 0570 423083, 24 hours on 300/300 baud. If you want 1200/75, ring 0570 423081 to ask for a verbally.

Marsat, run by Marcus Anselmi, is also known as FBBS HQ, as it was Marcus who wrote FBBS for the BBC. Following a *Popular Communications* system on FBBS, William Holmes then attempted to set up a 3-Board using FBBS with Le Modem and disaster followed disaster. My faith in FBBS dropped rapidly, but I now hear that having got hold of a Demarc modem, William is online (as Maximal Plus 5843 590000) and there are far fewer problems. So if you want to set up a board using FBBS, we'll now



recommend the Demarc modem.

A Palm version of the main machine code of FBBS is now available as well as a file version. For more details contact Marcus Anselmi at Marsat on 01-348 7150, 1200/75 and 300/300 24 hours.

Paul Birkett has written to me to ask which modem to use for linking his Commodore Amiga to Prestel and other boards. He has been advised to get either a V852000 or a Nightingale. My personal choice would be the V852000, but Neal, if you can afford an Amiga, you can probably also afford a Series 4 modem from Pace Micro Technology (ranging from £160-£820), or a W32000/W34000 from Microw Technology. Anyone who has the means to buy a modem at over £160 would be well advised to get an intelligent modem. Hayes compatible if possible (the W32000 and 4000), and the Series 4 are all Hayes modems.

Pace can be reached at Allerton Road, Bradford BD7 5J 740 8274 4882 111 and Microw Technology on 0479 2161.

Varying shades of MUD

You may remember that in *Popular*, August 21, we looked at *Goth* and *Shades*, two independent multi-user on-line adventures. *Shades* has now been taken over by Micronet 800, and has been up and running on Micronet for the last couple of weeks.

Shades is very similar to MUD in plot. You adopt a chosen persona, and starting as a novice, travel through a series of caves to reach the enchanted land of *Shades*.

There you'll be called upon to negotiate moated castles, a ruined city complete with explorable sewers below among many locations. Your objective, as in MUD is to find and collect as much treasure as

possible and deposit it to the mad king's room.

All along the way you can interact with the other players, amicably or otherwise. As in MUD, the wizards have powers beyond those of ordinary players, and can make life difficult for you if they so wish. You'll also need to look out for computer-generated monsters: rats, robots, and so on. Encounters with these can prove fatal.

Shades can be found on Micronet 800, page 8118a. It costs 97 pence per hour to play, and is open 24 hours a day. Up to 64 people can play simultaneously, so you should be able to log on OK. The game is reset every hour, so that

the treasure doesn't all end up in the mad king's room too quickly.

Details of how to subscribe to Micronet can be obtained on 01-379 3143.



Cheetah's cheaper

Mark Jenkins with a new Midi keyboard and products for the Spectrum and BBC



Cheetah Marketing continues to smash the combined worlds of music and music with the latest in a long line of products following on from their successful SpecDrums and AmDrums.

Now Cheetah has launched the MRS, a controller keyboard intended for use with any Midi product. The MRS is equally suited to playing a micro-based sampler, controlling a synth, or programming notes into a micro-controlled Midi sequencer system.

The keyboard has five octaves of full-sized keys and has a firm, pleasant action combined with tough all-metal construction. The hardware is manufactured in Italy and is completed by a three-figure LED display, window-mounted spring pitch bend wheel, play/program button and four small LEDs.

Connections are very simple - a Midi Out socket and an input for the external 5V power supply which is included in the package. The keyboard isn't velocity sensitive and lacks a modulation wheel, facts which will lose you a few facilities on even the cheapest synthesizers, but a fully-featured velocity sensitive control keyboard with the same full sized keys would cost at least three times more than the Cheetah.

Several additional control functions are carried out by the Cheetah's top octave of keys when you switch over into Program mode. Pushing the program/play button lights up the Program LED, and you then have a choice of increasing or decreasing the Midi transmission channel (1-16), the octave of the whole keyboard (1, 0, -1), or the program number transmitted (1-128) with different pairs of keys. If you want to actually carry out a patch change on any connected synthesizer, you then have to hit the key marked Program, and go back to Play mode before carrying on.

Incidentally, any keys held when you go into Program mode will continue to sound, so this button acts as a sort of Hold function, although it would be better to have this function also available on a footswitch (it should be pretty easy to connect a footswitch across the play/program button, but it'll invalidate your 12 month guarantee).

The handbook suggests several possible uses for the MRS - playing Midi

synths or modules, programming Midi sequences or computers via a Midi interface (or directly in the case of the Midi-equipped Atari 520), the alternative application is in playing the sound chip of an Amstrad or Spectrum 1208 or Plus 2 via the optional mini-interface (£29.95) and software package. The interface box has a Midi in lead from the keyboard, an edge connector for the computer, and software which can be transferred to microdrive if you wish.

The Mini Interface software lets you edit and play sounds on the AY-3-8910 sound chip using the MRS, and a sophisticated system of windows and menus controls all the functions. 64 sound patches can be stored in the Spectrum's memory simultaneously, three voices can be played at once, and an optional split point can be set two octaves from the bottom of the keyboard. The software allows you to define a seven-stage volume envelope, a pitch envelope, repeat delay/rate, noise mix, tremolo speed/depth/delay, and pitch bend wheel on/off. Sound settings can be saved to tape or microdrive.

If you have a Spectrum, starting with the Mini interface and software is a good idea, and will give you a reasonable idea of what could be done with a more advanced synthesizer. When you do want to move up, the Korg DX800 synthesizer is a useful, keyboardless, stereo polyphonic synth module with a simple built-in sequencer, while the Casio CZ-101 will offer eight-note chords or four different monophonic sounds simultaneously under the control of a hardware or software sequencer package.

What you're lacking on the Cheetah - velocity sensitivity, modulation and fast program changes - is more than made up for by the cheapness of the keyboard and the fact that it gives five octaves (expandable to seven with the octave switch) of Midi control over synths which may have four octaves of miniature keys, or to keys at all.

On to the BBC. Many existing owners will be pleased to learn that there's a new version of the best BBC Midi interface, the UM-38 from Soft Rock Systems. It's called the UM-39, and is a cut-down version of the 281 with one Midi in and two Midi Out sockets, Clock or Sync In and Out, Sync 24 Out for Roland-type drum machines, Start/Stop socket and built-in software.

The new software, which is updatable, includes on-screen help pages, and the 281 is priced at £165 (plus Vat). There's also a new software revision for the existing UM-28, with over 30 screens filling two floppies. More information from the addresses given below.

C-Music Ltd, 17 Parkfields, London SW15 6NN

Cheetah Marketing, 1 Millbrook Science Park, Crowtham Road, St Helens, Canth. Tel. 0222 777337

If you have any queries or tips for this column, please write to Mark Jenkins at **Popular Computing Weekly**, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.



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PCW Pursuit

Program Price/Pack/Type
Board game **Price** £18.95
PCW6256/8512 **Supplier**
Domark, 24 Weyple Road,
London SW20 8PN.

Having surprised almost everyone by the quality of Trivial Pursuit's conversion to home videos, Oxford Digital Enterprises and Domark have squared up to the next challenge — translating it to black and green only.

As with so many PCW implementations, the screen resolution makes for wonderfully detailed pictures, needed here to distinguish between the six different question subjects. In some ways it hasn't quite come off — you'll need to know the game very well before you can automatically distinguish which pattern refers to which subject.

More of the enjoyable elements of the game have been left out on the PCW — TF will throw the dice, says his host and puts in a word or two of encouragement. It also has the dreaded music questions, sending the victim into a huddle at the back of the monitor, straining to catch the gist of what sounds like a long baggage with a hole in it.



Amstrad CPC

Program Antebell Type
Strategy **Price** £1.99 **Supplier**
Finetard Software, 64-76 New Oxford Street,
London WC1A 1PS.

Budget strategy as the rebels storm the barricades. Ideologically sound strategy game that's well worth the investment.

Program Sport of Kings Type
Arcade **Price** £2.99
Supplier Mastertronic, 8-10 Paul Street, London EC2.

Program Janghler Type
Arcade **Price** £14.95 (tape)
£19.95 (disc) **Supplier** Finetard Software, 74 New Oxford Street, London WC1A 1PS.

A revised version of the ST classic, and console programmes. Realtime just about pull it off. Obviously not as colourful as we feel as the original, but still retains much of the excitement.

Program Tarmac Type
Adventure **Price** £9.95 (tape) £14.95 (disc) **Supplier**
Mantech, Mantech House, Bay Terrace, Peversey Bay, East Sussex BN24 9EE.

Program Ace Type
Arcade/Simulation **Price** £9.95 (tape) £14.95 (disc) **Supplier**
Cascade Games, Hemgate, North Yorkshire.

Program Bobby Bearing Type
Adventure/Strategy **Price** £9.95 (tape), £14.95 (disc) **Supplier** The Edge, 38/38 Southampton Street, London WC2E 2NE.

Excellent conversion of the Spectrum game that will either have you hooked with its puzzles and catches — or leave you stone dead.

Program Rogue Treasurer Type
Arcade **Price** £9.95 **Supplier** Phoenix, 4 Little Essex Street, London WC2R 3LF.

Program Battlefield Germany Type
Strategy **Price** £12.95

(tape), £17.95 (disc) **Supplier**
PBR, 443 Stanley Station Street, Coventry CV4 6QG.

Program Murder off Mass Type
Adventure **Price** £7.99 **Supplier** CPL, 9 Kings Yard, Carpenters Road, London E15 2HD.

Program Trivial Pursuit — Young Players' Edition Type
Quiz **Price** £14.95 (complete), £7.95 (questions only) **Supplier** Domark, 24 Weyple Road, London SW20 8PN.

New questions for stranger players — available as a new data set if you already have the original game. Baby Boomer and Genus II editions already in the planning stage.

Atari XL/XE

Program Caverns of Eldon Type
Arcade **Price** £1.99 **Supplier** Finetard Software, 64-76 New Oxford Street, London WC1A 1PS.

Not the most original of concepts as mashing around in caverns has been as long been an arcade cliché, but well enough done.

Program Masterbase Type
Strategy **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Back to Reality Type
Arcade **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Skinner Drivers Type
Adventure/Competition **Price** £14.95 (tape or disc) **Supplier** Rainbow Software, 74 New Oxford Street, London WC1A 1PS.

Level 9's Snowball trilogy repackaged and re-programmed and re-released. Good value introduction to quality adventuring.

Program Prince/Amulet Type
Quiz Game **Price** £14.95 (tape), £19.95 (disc) **Supplier** Domark, 24 Weyple Road, London SW20 8PN.

Atari ST

Program The Wanderer Type
Graphic adventure **Price** £24.95 **Supplier** Pyramide, via Rio Promotions, 28 Waverley Grove, London N3 3PX.

ST version of well-received graphic adventure. Said to be going down well in the States, so file it under illegal arms sales. Swiss bank accounts and impeachment rumors.

BBC/Electron

Program Eile Type
Arcade/Strategy **Price** £12.95 (tape), £14.95 (disc) **Supplier** Superior Software, Penguin House, Skinner Lane, Leeds LS2 1AS.

Memories are made of this. Eile, the first game I fell in love with (after Defender) has now been re-released at a slightly cheaper price, also appearing for the first time on 3½-inch format for the Master Compact.

Collectors of computer history will be interested to learn

that the game gained the highest market penetration ever achieved on a home micro — well over 50% of end users actually forked out the bananas and bought the thing... the next bit milk, crackers and a blank disc by the kitchen door on the night of a full moon and in the morning, to and behold, the poles had done their work.

More interesting facts. The game made Britain and Bell so much money that they decided to stop programming and concentrate on spending it. Hence Eile it is not likely to be winging its way to us until the barometer runs out. Too bad.

Back to Eile itself, the new BBC disc has three versions



an 4 - the standard game, a 8802 Reduced Processor version from Nasir plus more colour, if I remember correctly and a Master 128/Turbo version. Possibly worth getting if you have the appropriate kit, but the question is, if all the BBC games players have a copy of Zax - and believe me, they have - who the hell is going to buy it now!

C16/Plus 4

Program Saily Harp'd Type Arcade Price £1.99 **Supplier** - Farbed Software, 64-78 New Oxford Street, London WC1A 1PS.

Program Mispin's Cure Type Arcade Adventure Price £6.95 **Supplier** - Gentry Graphics, Alpha House, 10 Carver Street, Sheffield S1 4PS.



The 48 full-colour screens of this quest for the seven talismans is fast enough, but emphasises that the C16 only comes into it's own when running a fast, basic, shoot-'em-up.

Program Fighting Warrior Type Arcade Price £5.95 **Supplier** - Melbourne House, 80 High Street, Hampton Wick, Kingston Upon Thames, Surrey.

CBM 64

Program Rastily your Filling Type Arcade Price £1.99

Supplier - Fawkes, 84-78 New Oxford Street, London WC1A 1PS.

Many Men-style characters racing each other over a variety of landscapes for the affections of a Ms. Woman. The game is as fast as the plot line.

Program 43 - Our Year 2000 Type Arcade Price £9.95 (tape), £14.95 (disc) **Supplier** - American Action AG, PO Box 10086, 200 43 Malmo, Sweden.

Consider for the moment with splitting arcade alone this year. 43 - Our Year After One year after... you get it - 1942, although by the standard of design and programming, you might be forgiven for thinking it's 1942.

Program Conquest Type Arcade Price £2.99 **Supplier** - Macrometric, 6-10 Paul Street, London EC2.

Program Averger - Way of the Tiger Type Arcade Adventure Price £9.95 (tape), £14.94 (disc) **Supplier** - Greenin graphics, Alpha House, 10 Carver Street, Sheffield S1 4PS.



Slightly misleading in that it doesn't look anything like the original game - the plot continues on from Tiger if as you attempt to avenge the death of your father-lord Hajjah. Try saying that after twelve pints of lager.

Program Alghene Type Arcade Price £6.95 **Supplier** - Fawkes Than Light, Solihull Road East, Tipton, West Midlands DY4 7JJ.

Makes less of an impact on the 64, mainly because the standard of shoot-'em-ups is higher on the thing, but it's still high class auto-fire action from FTI.

Program Jason Type Arcade Adventure Price £9.95 (tape), £12.95 (disc) **Supplier** - Marbach, Marbach House, Bay Terrace, Penvenny Bay, East Sussex BN24 9EE.

Program Acric For Type Arcade/Strategy Price £14.94 (disc), £9.95 (tape) - available from 15th Dec! **Supplier** - Anolash, 58 Long Acre, Covent Garden, London WC2E 8JA.

Commodore 64 version of Battlezone plus strategy game, originally custom programmed for the Amiga. It's you and your tank vs the aliens - odds on it's not going to be a draw either.

Program Tracker Type Arcade/Strategy Price £14.95 (tape), £17.95 (disc) **Supplier** - Rastard, 74 New Oxford Street, London WC1A 1PS.

Rastard's fast wargame has a nice plot (computer taking over entertainment complex), reasonable implementation and possibly one of the worst novellas ever to accompany a computer program. Full review next week.

Program Bratner Type Arcade Price £9.95 (tape), £14.99 (disc) **Supplier** - US Gold, Unit 2/3 Holland Way, Holford Industrial Estate, Birmingham B6 7AX.

Catchup license. Make sure your armoured car over various terrains - esp everything that gets in your way. Futuristic action for would-be traffic offenders.

Program Bobby Steering Type Arcade/Strategy Price £6.95 (tape), £12.95 (disc) **Supplier** - The Edge,

36/38 Southampton Street, London WC2H 7JH.

Program Xax Type Arcade Price £7.95 **Supplier** - AMP, Argus Press Software, Victory House, Leicester Road, London WC2H 7HS.

Penny Football on a computer, I tell them - but it doesn't stop this being fast, furious fun. Really one of the best AMP releases in ages.

Program Judge Dredd Type Arcade Price £9.95 (tape), £14.95 (disc) **Supplier** - Melbourne House, 80 High Street, Hampton Wick, Kingston Upon Thames, Surrey, KY1 4DB.

Program Warrior Type Arcade Price £9.95 (tape), £12.95 (disc) **Supplier** - Nexus Productions, 158 House, 30 High Street, Beckenham, Kent BR2 8XW.

The most ironic and perhaps a follow-up to *Pat Warner* - that Beyond odds. Nicely done by the team of Paul Wray and Tony Downs.

Program Master of Miami Type Adventure Price £7.95 **Supplier** - CBL, 9 King Yard, Capetown Road, London E16 3AD.

Program Defiant Type Arcade Price £9.95 **Supplier** - Gusholme, Argus Press Software, Victory House, Leicester Place, London WC2H 7HS.

Program Total Pursuit - Young Players Version Type Quiz Price £14.95 (or £7.95 as data set) **Supplier** - Domark, 24 Weymouth Road, London SW20 8PW.

PC Compatibles

Program Jewels of Darkness Type Graphic Adventure Price £19.95 **Supplier** - Rainbird Software, 74 New Oxford Street, London WC2.

Program Road Patrol Type Quiz Price £19.95 **Supplier** - Domark, 24 Weymouth Road, London SW20 8PW.

Basically, it's the best

It is now nearly five years since I was swept into the world of computing, with what seemed at the time a complex, mysterious machine, namely a ZX81. On this little 1K wonder I learnt the fundamentals of programming. That it was just a crude Basic I was programming it was irrelevant, the thing that counted was the fact that I was actually programming the machine. Since that time, things have come a long way.

I now own a GL, which I bought for a little under three times the price of the ZX81. This included a micromonitor, two microdisks, the free software, and not forgetting the 128K memory, eight colours, hints, etc. Of course, GL SuperBasic is just that, a super version of the old workhorse.

Unlike languages like Pascal, Fortran and C which are defined under a set standard, Basic can be modified to the manufacturer's wishes, as long as the bare bones structure is kept. One could design a Basic which looked as much like, say, Pascal, that to use it as a normal Basic would be a vast under-use. This would be like using BBC or CG Basic without knowing procedures or functions.

The reason I'm going on about Basic so much is that there is so much more that could be done to improve it. With such radical new micro launched, a new dialect will be introduced which will, in

"One could design a Basic which looked so much like, say, Pascal, that to use it as a normal Basic would be a vast under-use"

most cases, supersede the version that were before.

However, the main computer the Basic, the slower it will run. The answer to faster Basic is to run it on a machine with a faster processor, or to compile it. Combining these two should provide a very fast, flexible and relatively easy to use language.

As it is, most machines come with a built-in interpreted Basic, and because it is so, it is slower than its compiled counterpart. It would be nice if manufacturers provided machines with a good screen editor and a built-in compiler on Rom. With huge memories now becoming the norm, programs could be written, compiled into memory and run from memory without using any backup medium until a programming session was complete.

Fortran programmers may be used to accessing huge libraries of routines from

within a program to perform special operations. A compiled Basic could, for example, make calls to procedures not resident in memory, but on hard, floppy or ram-disk. Thus a user could incorporate the same routines in different programs, without having to copy them into the source file.

A sufficiently powerful Basic would not be looked down on as a language where one gets 'lost' habits. In fact, even the most basic Basic allows for some modulus of structure, with judicious use of Goto and Gotoif.

I have reached a level where, using a Pascal screen editor, I am able to dispense with line numbers completely. This has the advantage of being able to rearrange the order of the procedures and functions, search for variable names etc. Of course, I can't run the program until I load it into the computer (which automatically prefixes line numbers), but a well organised program shouldn't need too much editing.

It seems strange after using a ZX81 to see something as expensive and powerful as, say, an Amiga and find it still using a Basic which is essentially the same as old ZX Basic.

At least I can be sure that the language people love to hate will be around for some time to come.

Steven Gray

NEXT WEEK

Hardware

Not content with attacking the top end of the micro market with the S.T.s, Atari is one of the companies predicting the resurgence of the cheap games consoles.

We take a long hard look at Atari's update to its range, the 7800 machine.

Karate Kid II

Marvel at the detailed, life-like graphics in our full colour review of Nintendo's latest.

Arcade Action

Anyone stuck in Poxonka's Sandhill Strike Force Games? Extricate yourself with the help of Tony Kandle's hints and tips.

Chess Board

Colossus author Martin Bryant brings you all the latest from the world of computer chess.

CPC Assembler

Don't miss the second part of Robert Osborne's assembly/disassembly for the Amstrad CPCs.

Hackers



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